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INDEX OF CIVILIAN INDUSTRIAL PRODUCTION
IN THE USSR
1950-61
(Supplement)



October 1963

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INDEX OF CIVILIAN INDUSTRIAL PRODUCTION
IN THE USSR
1950-61
(Supplement)

CIA/RR ER 63-29-S

CENTRAL INTELLIGENCE AGENCY
Office of Research and Reports

FOREWORD

This volume of 15 appendixes and 26 tables supplements CIA/RR ER 63-29, Index of Civilian Industrial Production in the USSR, 1950-61, September 1963. It contains detailed information on physical production, prices, value-added weights, and their derivation to support the data and construction of the index of civilian industrial production.

The following abbreviations occur frequently in this supplement: FRB (US Federal Reserve Board), MBMW (machine building and metalworking), and SIC (Standard Industrial Classification of the US Bureau of the Budget).

CONTENTS

Appendixes

	<u>Page</u>
Appendix A. Output of Industrial Materials in the USSR, 1950-61	1
Appendix B. Output of Civilian Machinery in the USSR, 1950-61	25
Appendix C. Description of the Civilian Machinery Sample (in Table 3)	51
Appendix D. Output of Processed Foods in the USSR, 1950-61	75
Appendix E. Output of Soft Goods in the USSR, 1950-61 . .	85
Appendix F. 1955 Prices of Industrial Materials in the USSR	91
Appendix G. 1955 Prices of Civilian Machinery in the USSR	103
Appendix H. 1955 Prices of Processed Foods in the USSR . .	123
Appendix I. 1955 Prices of Soft Goods in the USSR	127
Appendix J. Adjustment for Distribution Charges on Non- durable Consumer Goods in the USSR, 1955 . .	133
Appendix K. Four-Digit SIC Categories of the US FRB Index That Are Represented in the Sample of Production for the USSR	139
Appendix L. Derivation of 1955 Value-Added Weights for Civilian Production in the USSR	145
Appendix M. Official Soviet Indexes, by Branch of Industry, 1950-61	155
Appendix N. Linkage of the Small Sample of Production in the USSR for 1947-49 to the Sample for 1950-61	161
Appendix O. Source References [for the supplementary volume]	165

Tables

	<u>Page</u>
1. USSR: Output of Industrial Materials, 1950-61	3
2. Documentation for Output of Industrial Materials (in Table 1)	9
3. USSR: Output of Civilian Machinery, 1950-61	27
4. Documentation for Output of Civilian Machinery (in Table 3)	37
5. Characteristics of Selected Soviet Motor Vehicles . . .	68
6. Characteristics of Selected Soviet Tractors That Were Entered into Production After 1955	73
7. USSR: Output of Processed Foods, 1950-61	77
8. Documentation for Output of Processed Foods (in Table 7)	79
9. USSR: Retail Sales of Processed Foods, 1950-61	84
10. USSR: Output of Soft Goods, 1950-61	87
11. Documentation for Output of Soft Goods (in Table 10) .	88
12. USSR: 1955 Prices of Industrial Materials	93
13. Documentation for 1955 Prices of Industrial Materials (in Table 12)	97
14. USSR: 1955 Prices of Civilian Machinery	105
15. Documentation for 1955 Prices of Civilian Machinery (in Table 14)	112
16. USSR: 1955 Prices of Processed Foods Adjusted for Distribution Charges	125
17. USSR: 1955 Prices of Soft Goods	129

	<u>Page</u>
18. USSR: Adjustment for Distribution Charges on Processed Foods, 1955	135
19. USSR: Adjustment for Distribution Charges on Soft Goods, 1955	136
20. Four-Digit SIC Categories of the US FRB Index That Are Represented in the Sample of Production for the USSR .	141
21. USSR: 1955 Estimated Industrial Wage Bill	151
22. USSR: 1955 Estimated Amortization Charges	152
23. USSR: Indexes of Production with Alternative Machinery Weights, 1950-61	153
24. USSR: 1955 Estimated Value-Added Weights Exclusive of Military Hardware	154
25. Official Soviet Indexes, by Branch of Industry, 1950-61	157
26. Documentation for Official Soviet Indexes, by Branch of Industry (in Table 25)	158

APPENDIX A

OUTPUT OF INDUSTRIAL MATERIALS IN THE USSR
1950-61

Table 1

USSR: Output of Industrial Materials
1950-61

Materials	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
1. Electric power a/* (billion kWh)	86.0	98.0	112.1	126.5	141.4	159.3	179.6	196.7	220.8	248.1	273.6	306.8
2. Coal (thousand mt)	<u>261,089</u>	<u>281,928</u>	<u>300,875</u>	<u>320,422</u>	<u>347,109</u>	<u>391,259</u>	<u>429,174</u>	<u>463,470</u>	<u>496,112</u>	<u>506,606</u>	<u>513,186</u>	<u>510,535</u>
Anthracite	41,773	44,704	46,742	49,201	52,911	60,758	67,239	72,532	78,128	79,309	78,013	77,480
Bituminous	143,452	157,760	168,267	175,114	190,770	215,857	236,763	255,970	274,902	285,911	296,912	299,539
Lignite	75,864	79,464	85,866	96,107	103,428	114,644	125,172	134,968	143,082	141,386	138,261	133,516
3. Petroleum products and natural gas (million mt)	<u>42.4</u>	<u>47.2</u>	<u>52.6</u>	<u>58.8</u>	<u>66.0</u>	<u>78.3</u>	<u>94.5</u>	<u>113.6</u>	<u>135.5</u>	<u>157.4</u>	<u>183.1</u>	<u>211.5</u>
Refined products	33.6	37.6	42.1	47.1	53.2	63.7	75.2	86.7	96.9	107.9	120.8	132.8
Crude oil, con- sumed, added to storage, net exports	4.5	4.9	5.4	6.1	6.7	7.9	9.6	12.7	17.5	22.9	28.3	34.5
Associated natural gas	1.6	1.7	1.8	2.0	2.1	2.3	2.8	3.4	4.2	5.2	6.2	7.7
Natural gas (from gas wells)	2.7	3.0	3.3	3.6	4.0	4.4	6.9	10.8	16.9	21.4	27.8	36.5
4. Ferrous metals (rolled prod- ucts) (thousand mt)	20,888	24,029	26,808	29,393	32,066	35,339	37,833	40,211	43,117	47,050	50,956	55,265
5. Nonferrous metals (thousand mt)												
Copper, primary	246.6	281.1	323.3	320.8	336.8	377.3	386.7	396.4	406.0	450.0	490.0	530.0
Lead, primary	112	140	164	200	227	258	269	277	288	294	314	326
Zinc, primary	111	128	158	179	192	222	260	280	315	344	364	377
Aluminum, primary	155	190	240	300	430	465	490	510	510	600	700	800
Tin, primary	7.7	8.5	9.4	10.3	11.3	12.4	13.6	15.0	16.0	17.0	18.0	19.0
Magnesium, primary	6.0	6.0	7.5	7.8	9.0	12.0	15.0	16.5	18.0	21.0	25.0	30.5

* Footnotes for Table 1 follow on p. 8.

[p. 2 blank] - 3 -

Table 1
USSR: Output of Industrial Materials
1950-61
(Continued)

Materials	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
6. Forest products (million cubic meters)	<u>238.6</u>	<u>266.9</u>	<u>259.4</u>	<u>256.7</u>	<u>292.9</u>	<u>295.0</u>	<u>302.8</u>	<u>319.4</u>	<u>326.7</u>	<u>344.4</u>	<u>315.1</u>	<u>297.3</u>
Lumber	49.5	56.0	60.5	66.4	69.0	75.6	76.6	81.6	93.7	101.0	105.6	101.3
Industrial logs (excluding saw- logs in lumber)	84.1	98.7	92.1	78.1	100.8	97.6	106.0	114.2	108.9	112.7	101.5	95.3
Fuelwood	105.0	112.2	106.8	112.2	123.1	121.8	120.2	123.6	124.1	127.7	108.0	97.7
7. Paper and paper- board (thousand mt)	<u>1,485.1</u>	<u>1,675.6</u>	<u>1,844.9</u>	<u>2,054.1</u>	<u>2,268.5</u>	<u>2,407.7</u>	<u>2,581.2</u>	<u>2,782.3</u>	<u>2,956.4</u>	<u>3,090.7</u>	<u>3,226.9</u>	<u>3,445.5</u>
Paper												
Newsprint	233.3	281.6	286.9	293.1	315.9	361.1	360.2	376.8	388.9	400.5	433.8	493.1
Wrapping and packing	262.9	282.2	321.3	359.1	393.2	404.8	368.3	356.9	361.3	377.2	416.9	438.1
Printing	133.8	155.4	176.4	168.8	201.1	222.3	245.1	252.5	262.5	278.5	244.1	276.8
Writing paper	139.7	164.7	171.3	210.4	207.0	172.1	184.5	198.0	216.4	208.4	229.3	229.5
Sacking	83.6	93.4	108.2	120.3	138.4	142.8	166.1	183.4	212.4	217.6	216.8	235.9
Offset printing	10.3	10.7	13.1	17.6	23.8	24.4	36.2	49.7	55.4	60.4	61.7	54.7
Cover paper	27.1	28.0	28.3	34.1	32.3	33.8	37.0	37.4	36.9	38.9	42.3	47.4
Winding	18.7	15.8	18.3	19.6	21.4	22.2	22.7	21.5	26.0	23.8	22.1	23.3
Deep printing	5.3	6.0	9.6	8.6	8.8	11.1	14.5	18.5	21.1	19.4	25.1	25.2
Lithographic	5.5	5.3	5.7	5.2	5.3	5.1	5.6	6.6	7.7	8.4	8.8	8.7
Cartographic	8.4	8.6	10.3	9.6	10.6	10.7	11.0	11.9	12.1	13.1	13.1	13.5
Cable in- sulation	7.8	5.9	7.1	9.3	10.9	11.8	12.3	16.2	17.2	19.7	21.0	21.6
Capacitor	0.5	0.7	1.0	1.5	2.0	2.5	2.6	3.0	3.3	4.0	4.8	4.8
Waxing paper	3.3	3.7	4.3	6.5	7.0	8.1	9.7	10.4	10.3	10.9	11.9	11.9
Other	253.1	279.7	299.4	347.9	391.5	429.7	517.7	579.9	601.3	646.8	674.9	713.0
Paperboard	291.8	333.9	383.7	442.5	499.3	545.2	587.7	656.6	720.5	764.2	806.1	854.0
8. Chemicals (thousand mt)												
Nitrogen fertilizer	1,908.3	2,078.6	2,236.0	2,355.6	2,648.6	2,984.0	3,493.5	3,647.5	3,850.2	4,004.2	4,298.9	4,747.6

- 4 -

Table 1
(Continued)

Materials	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
8. Chemicals (thousand mt) (Continued)												
Phosphorous fertilizer	2,350.5	2,472.1	2,654.8	2,918.7	3,350.3	3,833.7	4,400.0	4,710.0	4,890.0	5,037.6	5,408.2	5,972.8
Potassium fertilizer	750.4	820.4	904.7	1,048.4	1,294.6	1,898.3	2,094.0	2,300.0	2,450.0	2,583.4	2,773.5	3,063.0
Phosphorite fertilizer	483.2	553.6	598.8	615.1	766.4	924.0	952.0	1,119.0	1,230.0	1,291.6	1,386.7	1,531.5
Sulfuric acid	2,125	2,372	2,662	2,919	3,292	3,798	4,323	4,569	4,803	5,082	5,398	5,728
Soda ash (calcined soda)	748.6	823.7	999.1	1,193.9	1,311.8	1,437.1	1,545	1,618	1,608	1,800	2,010	2,250
Caustic soda	321.8	351.9	390.4	448.1	498.1	563.4	631	670	710	765	830	898
Ethyl alcohol, nonfood (million gallons)	18.0	22.0	28.0	38.0	45.0	53.0	68.0	86.0	126.0	158.9	172.2	177.1
Wood chemicals												
Oleoresin, baros, and rosin	168.5	205.8	214.5	230.9	224.3	231.2						
Turpentine oil	14.4	17.6	19.2	20.4	20.9	21.3						
Acetate solvents	15.4	16.4	20.3	21.9	24.6	29.6						
Raw and refined turpentine	22.4	23.8	25.6	23.5	24.2	25.3						
Acetic acid	20.1	21.9	24.0	33.4	36.7	41.1						
Synthetic dyes	46.5	53.5	58.6	59.5	63.3	73.7	77.0	78.6	80.2	82.0	83.9	85.9
Synthetic fibers	24.2	35.4	49.2	62.3	78.8	110.5	128.9	148.7	166.0	179.5	211.2	250.4
Synthetic rubber	144	172	188	212	214	240	237	273	293	323	350	400
Plastics	73	88	105	126	151	181	209	235	260	294	332	405
Paints and varnishes												
Dry zinc whites	35.7	34.6	43.1	50.8	61.9	65.1	72.1	81.4	94.6	106.9	119.5	130.2

Table 1

USSR: Output of Industrial Materials
1950-61
(Continued)

Materials	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
8. Chemicals (thousand mt) (continued)												
Enamels and primers	48.9	58.1	57.1	70.1	83.8	104.8	117.3	133.3	143.7	152.9	162.6	153.9
Litharge and red lead	10.2	9.5	11.5	14.8	17.3	19.2	20.5	21.0	21.5	21.4	22.0	22.5
Nitrocellulose varnishes and solvents	34.3	45.2	49.5	53.6	63.3	78.7	83.3	100.7	127.9	143.7	161.3	165.9
Oil varnishes and siccatives	73.4	94.3	104.7	91.3	108.0	114.1	110.0	118.2	138.6	156.6	176.6	166.9
Natural drying oil	15.0	17.5	19.8	21.1	24.9	11.6	13.6	16.5	16.0	21.0	22.3	21.6
Oksoil drying oil	104.2	122.0	127.2	131.2	146.7	152.4	177.7	216.0	209.1	275.2	291.3	283.3
9. Construction materials												
Cement (thousand tons)	10,194	12,070	13,910	15,961	18,292	22,484	24,858	28,896	33,308	38,781	45,520	50,864
Construction lime (thousand tons)	4,154	4,660	4,923	5,314	5,810	6,205	6,388	7,208	8,385	9,213	9,562	9,361
Gypsum (thousand tons)	1,721	1,958	2,211	2,390	2,539	2,870	3,000	3,504	4,005	4,433	4,622	4,456
Dry gypsum plaster board (million square meters)	4.7	9.5	18.4	29.7	34.1	41.1	46.6	59.0	67.0	67.4	67.8	70.0
Ceramic tiles for facings and floors (million square meters)	2.2	2.9	3.8	4.9	6.4	8.4	10.5	12.7	14.5	15.2	18.5	20.0
Soft roofing (thousand square meters)	285,542	316,854	360,008	405,419	445,909	503,677	535,959	580,959	648,131	689,845	750,129	794,400
Roofing tile (million pieces)	222.5	268.1	319.1	376.6	428.8	472.1	498.4	557.2	671.0	761.4	807.0	813.0

Table 1
(Continued)

Materials	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
9. Construction materials (Continued)												
Asbestos cement shingle (million standard units)	546.4	695.4	878.4	1,074.2	1,261.6	1,488.0	1,809.4	2,152.9	2,406.7	2,603.4	2,991.4	3,396.8
Asbestos cement pipe (standard kilometers)	3,500	4,950	6,059	7,174	10,688	12,148	13,200	14,000	15,200	17,000	18,600	20,816
Refractory materials												
Fire clay (thousand tons)	2,631	2,832	3,104	3,324	3,564	3,878	4,024	4,202	4,365	4,640	4,922	5,212
Dinas brick (thousand tons)	734	739	795	840	831	728	655	623	620	654	665	689
Magnesite and chrome magnesite brick (thousand tons)	233	292	361	427	503	608	748	785	835	958	1,050	1,115
Magnesite powder (metallurgical) (thousand tons)	313	403	450	511	572	667	757	934	913	952	1,062	1,102
Window glass (million square meters)	76.9	67.7	62.0	76.0	86.4	99.8	112.2	120.9	133.1	139.8	147.2	153.1
Polished glass (thousand square meters)	263	354	513	802	1,258	1,502	1,790	2,000	2,200	2,960	3,825	3,845
Precast concrete (million cubic meters)	1.3	1.7	2.1	2.2	3.1	5.2	8.6	13.5	18.4	22.8	28.2	33.9
Of which:												
Prestressed concrete (thousand cubic meters)												
	75	203	341	1,050	2,687	4,092	4,972					

Table 1

USSR: Output of Industrial Materials
1950-61
(Continued)

Materials	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
9. Construction materials (Continued)												
Mineral wool insulation (million cubic meters)	0.7	0.8	1.0	1.2	1.5	1.6	1.9	2.3	2.6	3.3	4.0	4.9
Ceramic sewer pipe (thousand tons)	27.9	54.4	88.6	127.8	165.4	214.0	238.2	273.8	292.9	317.7	349.7	373.8
Masonry wall materials												
Construction brick (million standard bricks)	10,204	12,827	14,880	16,788	18,764	20,825	21,566	24,671	28,689	33,143	35,513	36,694
Dimension and field stone (billion standard bricks)	1.3	1.4	1.6	1.8	2.0	2.4	2.4	2.8	3.9	4.4	4.7	5.0
Large concrete (including porous) and silicate wall blocks (billion standard bricks)												
Small wall blocks (billion standard bricks)	1.5	1.6	1.7	1.9	2.0	2.4	2.4	3.3	3.6	3.4	3.0	2.3
Rock products (million cubic meters)	62	76	92	112	136	166	190	204	223	250	280 c/	310

a. Adjusted to a net output in order to be comparable with the US -- that is, electric power consumed by station for own use deducted.

b. Value estimates for 1956-61.

c. Information in *Vestnik statistiki*, No. 8, 1960, p. 86, indicates that the total output in 1960 was 339 cubic meters. There may be understatement for previous years in that all output was not reported.

Table 2

Documentation for Output of Industrial Materials (in Table 1)

Item	Sources of Production Data
I. Electric power	
Electric power generation (net of power for generating station use)	<u>1950-61</u> , USSR, Tsentral'noye Statisti- cheskoye Upravleniye. <u>Narodnoye khoz-</u> <u>yaystvo SSSR v 1961 godu</u> (The National Economy of the USSR in 1961), Moscow, 1962, p. 190. (hereafter referred to as <u>National Economy, 1961</u>)
II. Coal	
1. Anthracite	<u>1950-61</u> , <u>National Economy, 1961</u> , p. 204.
2. Bituminous	<u>Ibid.</u>
3. Lignite	<u>Ibid.</u>
III. Petroleum products and natural gas	
1. Refined products	<u>1950-61</u> , Nongas products from refinery yield of natural crude oil. A small amount of synthetic products is in- cluded. Estimated by the same methods as in National Petroleum Council Report, <u>Impact of Oil Exports from the Soviet</u> <u>Bloc</u> , vol II, 1962, p. 140.
2. Crude oil, consumed, added to storage, net exports	<u>1950-61</u> , Crude petroleum in <u>National</u> <u>Economy, 1961</u> , p. 209, less refined products adjusted for estimated syn- thetic products.
3. Associated natural gas	<u>1950-58</u> , Bokserman, Yu. I. <u>Gazovyye re-</u> <u>sursy SSSR</u> (Gas Resources of the USSR), Moscow, 1959, p. 65-67. (total gas less natural gas) <u>1959</u> , UN. Economic Commission for Europe, <u>Working Paper on Gas Problems</u> , Addendum 4, November 1960, p. 2. <u>1960-61</u> , UN. Economic Commission for Europe, <u>Annual Bulletin of Gas Statistics</u> , vol VII, 1961, p. 3.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
4. Natural gas	<u>1950-61</u> , <u>Ibid.</u>
IV. Ferrous metals	<u>1950-61</u> , <u>National Economy, 1961</u> , p. 196.
V. Nonferrous metals	
1. Copper, primary	<u>1950-58</u> , CIA. <u>CIA/RR ER 60-19, Copper in the Seven Year Plan (1959-65) of the USSR</u> , Jul 60, p. 3. <u>1959-61</u> , <u>Tsvetnyye metally</u> , no 2, 1962, p. 2.
2. Lead, primary	<u>1950</u> , USSR. <u>Bol'shaya Sovetskaya entsiklopediya</u> , section XII (Great Soviet Encyclopedia), p. 106. (hereafter referred to as Great Soviet Encyclopedia). 1950 production was 239 percent of 1945. For 1945, assume that production was slightly less than 1943 (estimated at 50,000 tons). For 1943, see Voznesenskiy, N. A. <u>Soviet Economy During the Second World War</u> , International Publishers, 1949, p. 24. Eastern regions of the USSR produced 59 times as much lead as in the whole territory of Russia in 1915 (846 tons). <u>1951</u> , <u>Pravda</u> , 29 Jan 52. <u>1952</u> , <u>Pravda</u> , 23 Jan 53. <u>1953</u> , <u>Pravda</u> , 31 Jan 54. <u>1954</u> , <u>Pravda</u> , 21 Jan 55. <u>1955</u> , But, A. I. <u>Planirovaniye i ekonomika predpriyatiy tsvetnoy metallurgii</u> (Planning and Economics of Enterprises of Nonferrous Metals), Moscow, p. 21. (hereafter referred to as <u>Planning and Economics of Nonferrous Metals</u>)

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
2. Lead, primary (Continued)	<p>1956, <u>Pravda</u>, 31 Jan 57.</p> <p>1957, <u>Kazakhstanskaya pravda</u>, 28 Jun 56. Kazakh SSR produced 77 percent of USSR 1955 production, or 199,000 metric tons.</p> <p><u>Kazakhstanskaya pravda</u>, 4 Jan 58. Kazakh SSR produced 8 percent more in 1957 than in 1955, or 215,000 metric tons.</p> <p><u>Kazakhstanskaya pravda</u>, 2 Feb 58. Kazakh SSR produced 77 percent of USSR 1957 production, or 215,000 metric tons.</p> <p>1958, <u>Narodnoye khozyaystvo Kazakhstana</u>, no 11, Nov 59, p. 81-87. In 1958 the Kazakh SSR produced 12.4 percent more lead than in 1955, or 224,000 tons. Assumption is made in 1958 as in 1957 the Kazakh SSR produced 77 percent of the total Soviet lead output.</p> <p>1959, Estimated by assuming that 1959 overfulfillment of lead plan (<u>Pravda Ukrainskaya</u>, 29 Dec 59) was 2 percent, which was less than average annual increase during 1956-58.</p> <p>1960, Production of lead increased (<u>Izvestiya</u>, 25 Jan 61), and Kazakh SSR produced 6.7 percent more during first five months of 1960 than in the same period in 1959 (<u>Narodnoye khozyaystvo Kazakhstana</u>, Jun 60, p. 91). Assumed that Kazakh SSR produced 75 percent of Soviet output of lead (<u>Vestnik Akademii Nauk Kazakhskoy SSR</u>, Jul 60, p. 22) and that production of lead in Kazakh SSR in the last 7 months of 1960 exceeded production in the last 7 months of 1959 by the same percentage that was obtained for the first 5 months.</p>

Table 2

Documentation for Output of Industrial Materials (in Table 1)
(Continued)

Item	Sources of Production Data
2. Lead, primary (Continued)	<p>1961, Soviet output (<u>Izvestiya nedelya</u>, 24-30 Dec 61, p. 2) and Kazakh SSR (<u>Kazakhstanskaya pravda</u>, 26 Jan 62) had been fulfilled. It is assumed that Kazakh SSR planned to produce 4 percent more lead in 1961 than in 1960 (<u>Kazakhstanskaya pravda</u>, 6 Jan 61) and that Kazakh SSR produced 75 percent of Soviet output of lead (<u>Narodnoye khozyaystvo Kazakhstana</u>, Apr 61, p. 91).</p>
3. Zinc, primary	<p>1950, USSR. <u>Great Soviet Encyclopedia</u> (see V, 2, above), p. 106, states that 1950 production was 247 percent of 1945. Output (45,000 tons) assumed higher than 1943. See <u>Voznesenskiy, N.A. Soviet Economy During the Second World War</u>, which states that for 1943 the eastern territory of USSR alone produced 18.8 percent as much zinc as in the whole territory of Russia in 1915 (2,050 tons).</p> <p>1951, <u>Pravda</u>, 29 Jan 52.</p> <p>1952, <u>Pravda</u>, 23 Jan 53.</p> <p>1953, <u>Pravda</u>, 31 Jan 54.</p> <p>1954, <u>Pravda</u>, 21 Jan 55.</p> <p>1955, But, A.I. <u>Planning and Economics of Nonferrous Metals</u> (see V, 2, above), p. 21.</p> <p>1956, <u>Pravda</u>, 31 Jan 57.</p> <p>1957, <u>Tsvetnyye metally</u>, no 5, 1958, p. 4.</p> <p>1958, <u>Narodnoye khozyaystvo Kazakhstana</u>, no 11, Nov 59, p. 81-87. Kazakh SSR produced 170 percent as much zinc as in 1955, or 126,000 tons. In 1958, Kazakh SSR produced 40 percent of the total Soviet output of zinc. See <u>Kunayev, D. Kazakhskaya SSR: Kratkiy istoriko-ekonomicheskiy ocherk</u> (<u>Kazakhstan Soviet Socialist Republic: Concise Historical Economic Essay</u>), Moscow, 1958, p. 74.</p>

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
3. Zinc, primary (Continued)	<p><u>1959</u>, <u>Pravda</u>, 15 Dec 59. <u>1959</u> Soviet zinc plan was overfulfilled (<u>Pravda Ukrayiny</u>, 29 Dec 59) and Kazakh SSR production of zinc increased in 1959 was 2 percent.</p> <p><u>1960</u>, Production of zinc increased as reported in <u>Izvestiya</u>, 25 Jun 61, and that Kazakh SSR produced 5.7 percent more during the first 5 months of 1960 than in the same period in 1959 (<u>Narodnoye khozyaystvo Kazakhstana</u>, Jun 60, p. 91). It is assumed that Kazakh SSR produced 40 percent of Soviet output of zinc (<u>Vestnik Akademii Nauk Kazakhskoy SSR</u>, Jul 60, p. 22) and that production in the last 7 months of 1960 exceeded production in last 7 months of 1959 by the same percentage that was obtained for the first 5 months.</p> <p><u>1961</u>, Soviet production (<u>Izvestiya nedelya</u>, 24-30 Dec 61, p. 2) and Kazakh SSR (<u>Kazakhtanskaya pravda</u>, 26 Jan 62) 1961 zinc plans had been fulfilled. Assumed that Kazakh SSR planned to produce 3.4 percent more zinc in 1961 than in 1960 (<u>Kazakhtanskaya pravda</u>, 6 Jan 61) and that Kazakh SSR produced 40 percent of Soviet output of zinc (<u>Narodnoye khozyaystvo Kazakhstana</u>, Apr 61, p. 91).</p>
4. Aluminum, primary	<p><u>1950</u>, But, A.I. <u>Planning and Economics of Nonferrous Metals</u> (see V, 2, above), p. 21.</p> <p><u>1951-53</u>, Interpolated.</p> <p><u>1954</u>, <u>Izvestiya</u>, 8 Feb 55.</p> <p><u>1955</u>, Gatsershteyn, I.M. <u>Razvitiye al-yuminiyevoy promyshlennosti SSSR</u> (Development of the Aluminum Industry of the USSR), Moscow, 1959, p. 55.</p> <p><u>1956</u>, <u>Pravda</u>, 26 Feb 56.</p> <p><u>1957</u>, <u>Trud</u>, 25 Apr 58.</p>

Table 2

Documentation for Output of Industrial Materials (in Table 1)
(Continued)

Item	Sources of Production Data
4. Aluminum, primary (Continued)	<p><u>1958</u>, <u>Na stroitel'stve truboprovodov</u>, no 2, 1959, p. 6-9.</p> <p><u>1959</u>, Derived from Seven Year Plan goals in <u>Pravda</u>, 28 Jun 59, p. 3.</p> <p><u>1960-61</u>, <u>Tsvetnyye metally</u>, no 9, 1962, p. 1-7.</p>
5. Tin, primary	<p><u>1950-57</u>, Based in interpolation between 1947 and 1957, <u>Tsvetnyye metally</u>, no 5, 1947, p. 7, and <u>Promyshlennno-ekonomicheskaya gazeta</u>, 4 Oct 57, p. 2. <u>Lakernik, M.M. Metallurgiya olova</u> (Metallurgy of Tin), Moscow, 1961, p. 487.</p> <p><u>1958-59</u>, Interpolated between 1957 and 1960, <u>Promyshlennno-ekonomicheskaya gazeta</u>, 30 May 56.</p> <p><u>1960</u>, <u>Promyshlennno-ekonomicheskaya gazeta</u>, 30 May 56.</p> <p><u>1961</u>, <u>Pervushin, S. A. Ekonomika tsvetnoy metallurgii SSSR</u> (Economics of Nonferrous Metallurgy in the USSR), Moscow, 1960, p. 182.</p>
6. Magnesium, primary	<p><u>1950</u>, <u>Pervushin, S. A., et al. Ekonomika tsvetnoy metallurgii SSSR</u> (Economics of Nonferrous Metallurgy in the USSR), Moscow, 1956, p. 39. Production was 270 times 1945 but was not fulfilled. 1945 production was 145 percent of 1940, for which see <u>ibid.</u>, p. 38, that Ural'skiy plant was 51 percent of Soviet magnesium capacity.</p> <p><u>1951-58</u>, <u>Izvestiya vysshikh uchebnykh zavedeniy, tsvetnaya metallurgiya</u>, no. 4, 1960, p. 157.</p> <p><u>1959</u>, <u>Ibid.</u>, no 2, 1959, p. 133. Production of magnesium to the production of aluminum reported to be 3.5 percent.</p> <p><u>1960</u>, <u>Byulleten' tsvetnoy metallurgii</u>, no 19/20, 1957, p. 4. Assumes that the Sixth Five Year plan goal was achieved.</p>

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
6. Magnesium, primary (Continued)	<u>1961</u> , Interpolated between 1960 and 1965. <u>1965</u> goals based on data in Benuni, A. Kh. <u>Razvitiye tsvetnoy metallurgii v 1959-</u> <u>1965 gg</u> (Development of Nonferrous Metallurgy in 1959-65), Moscow, 1960, p. 64.
VI. Forest products	
1. Lumber	<u>1950-61</u> , <u>National Economy</u> , <u>1961</u> , p. 236. Processed from sawlogs (industrial wood).
2. Industrial logs (excluding sawlogs in lumber)	<u>1950-61</u> , Output of lumber per cubic meter of industrial wood input reported for 1950-55 in USSR, Tsentral'noye Statist- icheskoye Upravleniye. <u>Promyshlennost'</u> SSSR (Industry of the USSR), Moscow, 1957, p. 266. (hereafter referred to as <u>Industry</u>); for 1956-61 the 1955 ratio is assumed. Divide lumber pro- duction (see above) by wood input ratio to derive volume of industrial wood used in lumber production. The above quotient is deducted from in- dustrial logs <u>1950-61</u> , <u>National Economy</u> , <u>1961</u> , p. 233, and the residual yields industrial logs exclusive of logs sawn for lumber. For 1955, lumber production of 75.6 million cubic meters, a wood input ratio of 66 percent is applied to derive 114.5 million cubic meters of industrial wood used in lumber. The latter is deducted from 1955 industrial log output of 212.1 million cubic meters to derive net industrial logs of 97.6 million cubic meters.
3. Fuelwood	<u>1950-61</u> , <u>National Economy</u> , <u>1961</u> , p. 233.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
(Continued)

Item	Sources of Production Data
VII. Paper and paperboard	
1. Newsprint	<u>1950-55</u> , <u>Industry</u> , p. 269.
2. Wrapping and packing	<u>1956-57</u> , <u>National Economy</u> , 1959, p. 230.
3. Printing	<u>1958-61</u> , <u>National Economy</u> , 1961, p. 238.
4. Writing paper	<u>1950-61</u> , <u>Ibid.</u>
5. Sacking	<u>Ibid.</u>
6. Offset printing	<u>Ibid.</u>
7. Cover paper	<u>Ibid.</u>
8. Winding	<u>Ibid.</u>
9. Deep printing	<u>Ibid.</u>
10. Lithographic	<u>Ibid.</u>
11. Cartographic	<u>Ibid.</u>
12. Cable insulation	<u>Ibid.</u>
13. Capacitor	<u>Ibid.</u>
14. Waxing paper	<u>Ibid.</u>
15. Other (residual)	<u>Ibid.</u>
16. Paperboard	<u>1950-61</u> , <u>National Economy</u> , 1961, p. 237.
VIII. Chemicals	
1. Nitrogen fertilizer	<u>1950-55</u> , <u>Industry</u> , p. 192. <u>1956-61</u> , Disaggregation of total mineral fertilizers as reported in <u>National Economy</u> , 1961, p. 219. Estimates based on ratio of nitrogen fertilizer to total mineral fertilizers in 1955. Ratios for 1956-58 modified slightly to conform to known outputs of potassium and phosphorite fertilizers.
2. Phosphorous fertilizer (18.7 percent P ₂ O ₅)	<u>1950-55</u> , <u>Industry</u> , p. 192. <u>1956-61</u> , Disaggregation of total mineral fertilizer as reported in <u>National Economy</u> , 1961, p. 219. Estimates based on ratio of phosphorous fertilizers to total mineral fertilizers in 1955. Ratios for 1956-58 modified slightly to conform to production of potassium and phosphorite fertilizers.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
3. Potassium fertilizer (41.6 percent K ₂ O)	<p><u>1950-55</u>, <u>Industry</u>, p. 192.</p> <p><u>1956</u>, Fedorenko, N.P., and Savinskiy, E.S. <u>Ocherki po ekonomike khimicheskoy promyshlennosti SSSR</u> (Essays on the Economics of the Chemicals Industry of the USSR), Moscow, 1960, p. 147. (hereafter referred to as <u>Essays on the Chemicals Industry</u>)</p> <p><u>1957</u>, Disaggregation of total mineral fertilizers as reported in <u>National Economy, 1961</u>, p. 219. Adjusted by ratio of potassium fertilizers to total in 1955.</p> <p><u>1958</u>, Vinogradov, A.P., et al. <u>Khimicheskaya promyshlennost' SSSR</u> (The Chemicals Industry of the USSR), Moscow, 1959, p. 309. (hereafter referred to as <u>Chemicals Industry of the USSR</u>)</p> <p><u>1959-61</u>, Disaggregation of total mineral fertilizers as reported in <u>National Economy, 1961</u>, p. 219. Adjusted by ratio of potassium fertilizers to total in 1955.</p>
4. Phosphorite fertilizer (19 percent P ₂ O ₅)	<p><u>1950-55</u>, <u>Industry</u>, p. 192.</p> <p><u>1956-57</u>, Fedorenko and Savinskiy. <u>Essays on the Economics of the Chemicals Industry</u> (see VIII, 3, above), p. 143.</p> <p><u>1958</u>, Vinogradov, A.P., et al. <u>Chemicals Industry of the USSR</u> (see VIII, 3, above), p. 308.</p> <p><u>1959-61</u>, Production based on 1955 proportion of phosphorite fertilizers to total mineral fertilizers. The total of mineral fertilizers for 1950-55 is slightly below estimates for these years in latest handbook. Beginning in 1956 a small amount of borate magnesium was included and the historical series were adjusted. See <u>National Economy, 1961</u>, p. 219. No adjustment has been made in this report.</p>

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
5. Sulfuric acid	<u>1950-61</u> , <u>National Economy</u> , <u>1961</u> , p. 220.
6. Soda ash	<u>1950-56</u> , <u>Industry</u> , p. 194. <u>1957</u> , <u>Pravda</u> , 27 Jan 58. <u>1958</u> , Fedorenko, N.P., and Shilkina, R.N. <u>Semiletka khimicheskoy promyshlennosti v tsifrah i faktakh</u> (The Seven Year Plan for the Chemical Industry in Figures and Facts), Moscow, 1961, p. 127. (hereafter referred to as the <u>Seven Year Plan for the Chemicals Industry</u>) <u>1959-61</u> , <u>Ibid.</u> , Estimated on the basis of plan data.
7. Caustic soda	<u>1950-55</u> , <u>Industry</u> , p. 60. <u>1956</u> , USSR, <u>Tsentral'noye Statisticheskoye Upravleniye</u> . <u>Narodnoye khozyaystvo v 1956 godu</u> (National Economy in 1956), Moscow, 1957, p. 60. <u>1957</u> , <u>Pravda</u> , 27 Jan 58. <u>1958</u> , Fedorenko and Savinskiy. <u>Essays on the Economics of the Chemicals Industry</u> (see VIII, 3, above), p. 130. <u>1959-60</u> , Interpolated from 1958 and 1961 data. <u>1961</u> , <u>Pravda</u> , 26 Jan 1963, p. 1.
8. Ethyl alcohol, nonfood	<u>1950</u> , <u>1955</u> , <u>1959-61</u> , <u>Spirtovaya promyshlennost'</u> , no 5, 1962, p. 1-2. <u>1951-54</u> , <u>1956-58</u> , <u>National Economy</u> , <u>1961</u> , p. 272, Interpolated and based on output of all alcohol.
9. Wood chemicals	<u>1956-58</u> , Value interpolated between 1955 and 1959. <u>1959-61</u> , Based on statement that gross industrial production for wood chemicals would increase by more than two times during Seven Year Plan. Ruzhkov, G.F. <u>Ekonomika lesokhimicheskoy i gidroliznoy promyshlennosti</u> (Economics of Wood Chemicals and Hydrolysis Industries), Moscow, 1961, p. 141.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
a. Oleoresin, baros, and rosin	<u>1950-55</u> , <u>Industry</u> , p. 198.
b. Turpentine oil	<u>Ibid.</u>
c. Acetate solvents	<u>Ibid.</u>
d. Raw and refined turpentine	<u>Ibid.</u>
e. Acetic acid	<u>Ibid.</u>
10. Synthetic dyes	<u>1950-55</u> , <u>Industry</u> , p. 197. <u>1956</u> , <u>Khimicheskaya nauka i promyshlennost'</u> , no 5, 1957, p. 578. <u>1957</u> , Interpolated. <u>1958</u> , <u>Fedorenko and Savinskiy. Essays on the Economics of the Chemicals Industry</u> (see VIII, 3, above), p. 299. <u>1959-60</u> , Interpolated between 1958 and 1961. <u>1961</u> , <u>Ekonomicheskaya gazeta</u> , no 4, 1963, p. 36
11. Artificial and synthetic fibers	<u>1950-61</u> , <u>National Economy</u> , 1961, p. 221.
12. Synthetic rubber	<u>1950-61</u> , CIA. CIA/RR ER 61-49, <u>The Synthetic Rubber Industry in the USSR During the Seven Year Plan, 1959-65</u> , Dec 61.
13. Plastics	<u>1956</u> , US Joint Publications Research Service, JPRS 7391, 20 Dec 60, p. 6. Per capita production in 1956 is 1.03 kg, or 206,000 tons. <u>1950, 1955, 1958</u> , Vinogradov, A.P., et al. <u>Chemicals Industry of the USSR</u> (see VIII, 3, above), p. 78; <u>Khimicheskaya promyshlennost'</u> , no 7, Oct/Nov 1957, p. 13. <u>1951-54, 1957</u> , Interpolated from data for 1950, 1955, 1958 (see above). <u>1959</u> , <u>Pravda</u> , 22 Jan 60 and 26 Jan 61. All plastic indexes adjusted to level of Khrushchev's 1960 estimate given in 22nd Party Congress speech, <u>Pravda</u> , 19 Oct 61.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
(Continued)

Item	Sources of Production Data
13. Plastics (Continued)	1960, <u>Pravda</u> , 19 Oct 61. 1961, Adjusted in accordance with Seven Year Plan goals data in <u>Ekonomicheskaya gazeta</u> , 11 Dec 61, p. 10.
14. Paints and varnishes	
a. Dry zinc whites	1950-55, <u>Industry</u> , p. 198. 1956-57, <u>National Economy</u> , 1959, p. 204. 1958-61, <u>National Economy</u> , 1961, p. 221.
b. Enamels and primers	1950-61, <u>Ibid</u> .
c. Litharge and red lead	<u>Ibid</u> .
d. Nitrocellulose varnishes and solvents	1950, <u>National Economy</u> , 1958, p. 226. 1951-55, <u>Industry</u> , p. 198. 1956-57, <u>National Economy</u> , 1959, p. 204 1958-61, <u>National Economy</u> , 1961, p. 221.
e. Oil varnishes and siccatives	1950-55, <u>Industry</u> , p. 198. 1956-57, <u>National Economy</u> , 1959, p. 204. 1958-61, <u>National Economy</u> , 1961, p. 221.
f. Natural dry oil	1950-55, <u>Industry</u> , p. 198. 1956-57, <u>National Economy</u> , 1959, p. 204. 1958-61, <u>National Economy</u> , 1961, p. 221. (Natural dry oil and oksol drying oil 1956-59 breakdown based on 1955 ratio.)
g. Oksol drying oil	1950-55, <u>Industry</u> , p. 198. 1956-57, <u>National Economy</u> , 1959, p. 204. 1958-61, <u>National Economy</u> , 1961, p. 221.
IX. Construction materials	
1. Cement	1950-61, <u>National Economy</u> , 1961, p. 239.
2. Construction lime	1950-61, <u>National Economy</u> , 1961, p. 241.
3. Gypsum	1950-61, <u>Ibid</u> .
4. Dry gypsum plaster board	1950, 1953-57, <u>SSSR v tsifrakh</u> (USSR in Figures), Moscow, 1958, p. 122. 1951-52, <u>Stroitel'nyye materialy</u> , no 10, 1957, p. 8. 1958, Estimate based on the Seven Year Plan.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
 (Continued)

Item	Sources of Production Data
	<u>1959</u> , Interpolated between 1958 and 1960. <u>1960</u> , Rozenfel'd, Sh. L. <u>Problemy razmeshcheniya promyshlennosti stroitel'nykh materialov SSSR</u> (Problems of Location of Construction Materials Industry of the USSR), Moscow, 1962, p. 52. <u>1961</u> , Extrapolated on the basis of 1958-60 production.
5. Ceramic tiles for facings and floors	<u>1950</u> , <u>Industry</u> , p. 298. This was inflated by one and a half times on the basis of the JPRS 1642-N, 8 Jun 59, p. 25, statement that floor tiles were two-thirds of total output in 1955. <u>1951-54</u> , Interpolated. <u>1955-57</u> , JPRS 1642-N, 8 Jun 59, p. 25. <u>1958-59</u> , <u>Steklo i keramika</u> , no 5, May 1960, p. 5. <u>1960-61</u> , Adjusted in accordance with the Seven Year Plan goals reported in <u>Proizvodstvo izdeliy stroitel'noy keramiki</u> (Production of Articles of Ceramic Construction), Moscow, 1962, p. 27.
6. Soft roofing	<u>1950-60</u> , <u>National Economy</u> , 1960, p. 315. <u>1961</u> , <u>National Economy</u> , 1961, p. 246.
7. Roofing tile	<u>1950-59</u> , <u>National Economy</u> , 1959, p. 240. <u>1960</u> , Rozenfel'd, Sh. L. <u>Problemy razmeshcheniya promyshlennosti stroitel'nykh materialov SSSR</u> (Problems of Location of Construction Materials Industry of the USSR), Moscow, 1962, p. 52. <u>1961</u> , Derived from ratio between units and square meters in 1960 (Rozenfel'd and <u>National Economy</u> , 1961) applied to square meters for 1961.
8. Asbestos cement shingle	<u>1950-61</u> , <u>National Economy</u> , 1961, p. 246.
9. Asbestos cement pipe	<u>1950-55</u> , <u>Industry</u> , p. 315. <u>1956-58</u> , JPRS 1642-N, 8 Jun 59, p. 25. <u>1959</u> , Interpolation between 1958 and 1960 preliminary from <u>Stroitel'nyye materialy</u> , no 1, 1961, p. 1.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
(Continued)

Item	Sources of Production Data
9. Asbestos cement pipe (Continued)	<u>1960</u> , <u>Stroitel'nyye materialy</u> , no 1, 1961, p. 1. <u>1961</u> , Derived from <u>Stroitel'nyye materialy</u> , no 11, 1962, p. 2.
10. Refractory materials	
a. Fire clay	<u>1950-55</u> , <u>Industry</u> , p. 297. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 240. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 245.
b. Dinas brick	<u>1950-61</u> , <u>Ibid.</u>
c. Magnesite and chrome magnesite brick	<u>Ibid.</u>
d. Magnesite powder (metallurgical)	<u>Ibid.</u>
11. Window glass	<u>1950-61</u> , <u>National Economy</u> , 1961, p. 247.
12. Polished glass	<u>1950-55</u> , <u>Industry</u> , p. 312. <u>1956</u> , <u>Stroitel'nyye materialy</u> , no 10, Oct 57, p. 10. <u>1957</u> , Interpolated. <u>1958</u> , JPRS 1760-N, 16 Jul 59, p. 18. <u>1959</u> , <u>Steklo i keramika</u> , no 7, Jul 1960, p. 1. <u>1960-61</u> , <u>Ekonomika stroitel'stva</u> , no 10, 1962, p. 41.
13. Precast concrete (including prestressed concrete)	<u>1950-55</u> , <u>Industry</u> , p. 311. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 242. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 242.
14. Mineral wool insulation	<u>1950</u> , <u>1955</u> , <u>National Economy</u> , 1960, p. 317. <u>1953</u> , <u>1956-57</u> , <u>National Economy</u> , 1958, p. 270. <u>1951-52</u> , Interpolated. <u>1954</u> , <u>USSR in Figures</u> , 1958, p. 122. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 242.
15. Ceramic sewer pipe	<u>1950-55</u> , <u>Industry</u> , p. 316-318. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 244. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 247.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
(Continued)

Item	Sources of Production Data
16. Masonry wall materials	
a. Construction brick	<u>1950-61</u> , <u>National Economy</u> , 1961, p. 244.
b. Dimension and field stone	<u>1950</u> , <u>1956-57</u> , USSR. <u>Vsesoyuznoye soveshchaniye po stroitel'stve</u> , 10-12 Aprelya 1958 g (The All-Union Conference for Construction, 10-12 April 1958, section on Construction Materials), Moscow, 1958, p. 83. <u>1951-55</u> , Interpolated. <u>1958-60</u> , <u>National Economy</u> , 1960, p. 311. <u>1961</u> , Derived from reported production of small wall blocks and natural stone.
c. Large concrete (including porous) and silicate wall blocks	<u>1956</u> , <u>SSSR v tsifrakh v 1959 godu</u> (USSR in Figures in 1959), p. 79. <u>1957</u> , JPRS 1886-N, 4 Sep 59, p. 2. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 243.
d. Small wall blocks	<u>1950-61</u> , Residual of total wall materials less brick, large wall blocks and dimension and field stone. For total wall materials, see <u>1950</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Kapital'-noye stroitel'stvo v SSSR</u> (Capital Construction in the USSR), Moscow, 1961, p. 242. <u>1951-54</u> , Interpolated. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 237. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 243.
17. Rock products (crushed stone, sand, gravel, and rubble)	<u>1950</u> , <u>The All-Union Conference for Construction</u> , 10-12 April 1958, p. 133. <u>1951-54</u> , Interpolated. <u>1955</u> , <u>Finansy SSSR</u> , no 11, Nov 56, p. 57. <u>1956</u> , <u>Promyshlennoye stroitel'stvo</u> , no 11, Oct 1958, p. 37. <u>1957</u> , <u>The All-Union Conference for Construction</u> , p. 133. <u>1958</u> , Rat'kovskiy, L.P. <u>Proizvodstvo nerudnykh materialov zapolniteley dlya betona</u> (The Production of Rock Products Filler for Concrete), Moscow, 1960, p. 5.

Table 2

Documentation for Output of Industrial Materials (in Table 1)
(Continued)

Item	Sources of Production Data
17. Rock products (Continued)	<u>1959, Stroitel'naya gazeta</u> , 8 Jul 60, p. 1. <u>1960-61, Extrapolated on the basis of</u> <u>1958-59 production.</u>

Deductions for Double Counting in Construction Materials

Deductions are made for (1) cement included in precast concrete, asbestos cement shingle, asbestos cement pipe, large and small concrete blocks; (2) rock products in precast concrete, cement, lime, large concrete blocks, and bricks; (3) gypsum in cement and dry gypsum plaster board. The following coefficients have been applied:

Cement

Precast: 1 ton of cement per 3 cubic meters of precast concrete.

Shingle: the standard shingle measures 40-40-4mm, 85 percent of which is cement.

Pipe: 1 kilometer of 200-mm diameter pipe weighs approximately 19 tons, of which 15 tons, or 79 percent, is cement.

Concrete blocks: .5558 kilograms of cement per single brick.

Rock products

1. .83 cubic meter of the appropriate mix of rock products per cubic meter of precast concrete.

2. .53 cubic meter of appropriate mix of rock products per cubic meter of cement.

3. .39 cubic meter of appropriate mix of rock products per cubic meter of lime.

4. 733.3 cubic meter of appropriate mix of rock products per cubic meter of large concrete block.

5. 115.6 cubic meter of appropriate mix of rock products per cubic meter of silicate brick.

Gypsum

1. Approximately 3 percent of cement is gypsum.

2. One square meter of dry gypsum plaster board weighs 10 kg (all gypsum).

APPENDIX B

OUTPUT OF CIVILIAN MACHINERY IN THE USSR
1950-61

Table 3

USSR: Output of Civilian Machinery
1950-61

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
1. Boilers (thousand mt)													
Steam boilers (high capacity, 40 tons of steam per hr or over)		6.1	7.8	12.1	18.7	21.3	26.3	23.8	21.8	22.0	22.8	31.1	35.7
Steam boilers (medium capacity, 10 to 40 tons of steam per hr)		0.9	1.3	2.5	2.3	1.7	2.1	2.0	2.1	2.8	3.3	3.8	4.4
Steam boilers (low capacity, 10 tons of steam per hr or less)		6.0	6.8	8.3	9.6	10.0	12.7	14.4	14.8	15.2	15.6	- 15.4	17.7
2. Electric power equipment													
Steam and gas turbines (thousand kw)		2,388	2,670	2,880	4,040	4,205	4,076	4,278	4,071	5,076	5,794	7,473	8,118
Hydraulic turbines (thousand kw)		316.0	479.6	572.5	719.4	1,263.5	1,495.2	1,584.2	1,311.1	1,570.6	1,800.1	1,726.9	2,614.2
Generators for steam turbines (thousand kw)		676.5	1,425.0	1,824.0	2,677.0	2,536.0	3,113.0	3,832.0	4,068.0	3,785.0	5,053	6,142	7,144
Generators for hydraulic turbines (thousand kw)		257.8	497.9	686.0	790.4	1,280.4	1,412.7	1,352.0	1,490.0	1,401.0	1,459	1,773	2,306
Electric motors over 100 kw (thousand kw)		2,536	2,673	2,305	2,474	2,092	2,241	2,452	2,898	3,328	3,735	4,104	4,435
Power transformers (thousand kva)		10,200	11,700	13,900	15,700	15,600	19,700	23,700	26,900	30,500	40,500	49,400	64,100
Electric bulbs (million units)		212.9	256.0	278.6	297.6	318.7	356.8	409.5	467.7	531.4	585.3	638.1	676.8

[P. 26 p. blank] - 27 -

Table 3
USSR: Output of Civilian Machinery
1950-61
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
3. Metalcutting machine tools (units) g/*													
Lathes	1623	20,459	21,092	24,258	21,752	202,362	117,087	124,048	131,006	138,290	147,574	155,922	165,772
Turret lathes	1336M	24,140	23,142	23,853	27,348	29,507	31,292	30,073	33,385	34,105	36,795	36,957	42,372
Automatic lathes (one spindle)	1112	1,402	1,563	1,684	2,010	2,378	2,825	2,619	2,859	2,986	3,474	3,583	4,099
Plano-milling machines	661B	863	981	1,129	1,237	1,152	1,524	1,798	2,752	3,280	3,512	4,257	4,542
Gear-making machines	526	3,857	3,827	4,287	5,022	6,404	7,339	8,596	11,466	13,295	14,378	16,138	17,574
Jig-boring machines	2450	1,658	1,941	1,686	1,799	1,689	1,973	2,390	2,753	2,427	3,001	3,324	4,007
Planers	7242A	227	327	416	493	606	643	678	770	864	1,052	1,314	1,589
Shapers	7A35	218	271	343	326	380	453	429	460	480	328	433	412
Sloitters	7430	2,561	2,855	3,447	3,193	3,721	3,559	3,504	3,391	3,430	2,896	2,533	2,626
Horizontal broaching machines	7540	104	169	309	419	540	505	661	643	677	497	733	760
Internal grinding machines	3260	179	272	199	224	273	307	332	480	515	587	600	690
Drill grinders	367	3,574	4,049	3,185	3,369	3,432	3,959	5,225	5,910	6,709	7,062	7,439	9,177
Vertical drills	2A25	1,575	1,700	1,516	1,635	1,543	1,864	2,507	3,156	3,249	3,839	4,343	5,549
Radial drills	255	9,889	11,022	12,962	19,014	22,098	24,921	23,688	30,673	30,367	32,228	31,942	30,814
Special, specialized, and unit-type grinders, polishers, and bolt threaders	1982	870	1,123	1,388	1,677	1,725	2,000	2,311	2,888	3,010	3,518	4,121	3,231
4. Railroad machine building (units)													
Mainline freight cars, four-axle		50,795	28,166	24,433	25,086	23,882	34,405	40,200	38,300	40,300	38,600	36,400	35,000
Refrigerator cars		1,528	2,405	1,846	980	1,408	1,602	1,648	1,312	1,400	1,999	21,767	
Boxcars		21,071	12,425	10,046	9,457	6,022	5,911	1,400	8,741	5,815	4,503	222	
Flatcars		5	1,522	6,089	3,273	3,288	3,450	50					
Gondolas		20,595	5,725	3,246									
Tank cars		7,596											
Cement cars													

* Footnotes for Table 3 follow on p. 36.

Table 3
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
4. Railroad machine building (units) (Continued)													
Rail passenger cars													
Mainline passenger cars		912	1,327	1,299	1,483	1,751	1,772	1,799	1,856	1,782	1,790	1,656	1,748
Trolley cars		375	313	349	357	432	366	690	810	874	904	907	1,656
Subway cars		61	56	60	64	70	59	70	71	70	80	90	100
Mainline locomotives													
Steam locomotives		285	665	254	668	758	654	490					
L		493	333	254	668	758							
S0		492	332										
LV													
Diesel locomotives		125	76	75	101	120	134	161	400	712	1,002	1,303	1,452
TE-1		80	76	75	101	120	134	161	400	712	1,002	1,303	1,455
TE-2		45											
TE-3													
Electric locomotives		102	113	110	147	158	194	216	270	344	435	396	527
VI-22m		102	113	110	147	158	194	216	270	344	435	396	527
VI-23													
N-8													
N-60													
5. Motor vehicles (thousand units)													
Passenger cars		64.6	53.6	59.7	77.4	94.7	107.8	97.8	113.6	122.2	124.5	138.8	148.9
Trucks		294.4	229.8	213.4	270.7	300.9	328.7	357.1	371.1	376.6	352.7	364.0	384.5
Buses		3.9	5.3	4.8	6.1	8.3	8.8	9.7	10.7	12.3	17.8	20.8	21.9

Table 3
USSR: Output of Civilian Machinery
1950-61
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
6. Tractors (units)		<u>108,830</u>	<u>91,825</u>	<u>98,655</u>	<u>111,298</u>	<u>135,442</u>	<u>163,437</u>	<u>183,549</u>	<u>203,837</u>	<u>219,704</u>	<u>213,510</u>	<u>238,508</u>	<u>263,590</u>
Tracklaying		85,078	72,287	78,212	87,825	90,648	100,491	109,253	118,333	118,251	103,839	122,031	136,596
	DT-54	42,952	35,900	43,744	51,578	55,166	61,688						
	KD-35	4,934	6,670	6,879	7,000	1,119	2,255						
	KDP-38	150	732	1,447	3,000	9,337	11,846						
	KT-12A	6,015	2,460	5,097	6,071	5,950	5,444						
	ASKHTZ-NATI	10,827	8,925	2,640									
	S-80	20,200	17,600	18,405	20,176	19,076	19,258						
Wheeled		23,752	19,538	20,443	23,473	44,797	62,946	74,296	85,504	101,453	109,671	116,477	127,034
	U-1, U-2, U-3,												
	U-4	15,002	14,594	15,828	17,003	18,650	17,030						
	KBTZ-7	2,620	4,944	4,615	6,001	11,300	16,951	1,400					
	Belarus (MTZ-1, MTZ-2, MTZ-5)												
	DT-24												
	DT-14												
	DT-28												
	International												
	15/30												
All others		6,100											
7. Agricultural ma- chine building (units)													
Combines, grain, tractor-drawn	Stalinets-6 and RSM-8	23,200	24,100	20,700	19,800	20,800	28,000	58,900	100,500	29,800	1,100	100	
Combines, grain, self-propelled	S-4M and SK-3	23,100	29,200	21,500	23,200	17,800	20,000	22,900	31,000	35,200	53,600	58,900	76,300
Combines, corn	KU-2		25	36	507	2,362	4,011	14,200	31,400	6,100	200	3,600	12,600
Combines, flax	LK-7	1,222	1,518	1,399	1,500	1,417	15,683	15,101	5,700	8,600	7,300	4,900	5,600
Combines, potato		55	100	101	2,070	5,000	7,072	32,000	7,097	54,800	38,100	12,600	15,000
Combines, beet	SKRM-3	1,687	1,376	1,316	2,000	2,000							
Combines, ensilage	SK-2.6	50	10										

Table 3
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	
7. Agricultural machine building (units) (continued)														
Cotton pickers	SKhM-48M ZHR-4.6	4,741	9,840	3,996	3,599	3,386	555	885	150	20	486	3,200	4,300	
Windrows		479	1,331	707	700	713	2,425	81,200	144,600	96,300	55,400	56,900	56,200	
Pickups, for grain combines							96,000	198,000	184,000	91,100	63,000			
Plows, moldboard, tractor-drawn and mounted	PM-5-35M	121,900	107,700	94,500	95,200	101,000	103,200	123,500	127,800	164,000	154,900	149,100	138,200	
Harrow-plows, tractor-drawn		76,400	74,000	31,500	23,700	29,900	29,000	16,500	18,500	26,900	20,900	32,700	45,300	
Harrows, tractor-drawn		10,100	8,000	7,700	7,100	7,600	9,700	10,100	11,400	14,000	19,400	21,500	17,500	
Cultivators, tractor-drawn and mounted		98,900	116,100	94,300	87,500	93,800	112,600	149,600	208,100	180,300	121,500	84,800	91,800	
Sowing machines, tractor-drawn and mounted		118,400	136,500	130,100	95,300	95,300	123,300	199,400	278,100	218,300	136,700	123,000	154,500	
Potato planters, tractor-drawn	K-6B	2,500	6,000	7,300	4,800	23,700	24,200	6,600	9,300	5,000	1,400	6,000	5,700	
Moving machines, tractor-drawn and mounted		41,200	87,300	104,500	57,700	22,000	22,600	27,200	46,400	76,500	83,800	87,500	92,100	
Rakes, tractor-drawn		5,800	13,800	17,400	21,300	25,100	25,600	11,000	3,100	11,100	14,500	24,200	43,700	
Threshing machines, complex and semi-complex		15,500	7,100	4,100	3,700	5,300	3,800	3,410	6,500	10,200	6,300	2,100	500	
Grain cleaning machines		6,400	6,300	6,600	6,700	8,200	10,100	10,000	10,000	12,100	15,600	17,000	10,400	
Cutters, straw-ensilage		20,400	26,300	20,000	14,000	25,000	47,000	33,600	33,800	31,700	22,500			
Forager steamers (Ukraine) b/	7,522	12,691	14,329	17,678	25,334	21,448								
Cultivators, horse-drawn (Uzberk) b/		9,200	9,000	6,700	8,700	18,300	15,800	23,500	10,500	17,000				

Table 3

USSR: Output of Civilian Machinery
1950-61
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
7. Agricultural machine building (units) (Continued)													
Rakes, horse-drawn (Kirgiz) b/ Sprayers, hand (RSFSR) b/ Dusters, hand (RSFSR) b/ Hillers, horse- drawn (RSFSR) b/ Sorters (RSFSR) b/		43,800	33,700	31,700	16,700	11,300	40,100	59,000	50,700				
Multibucket Single-bucket (bucket capacity in cu m)	ETU-353	345	468	570	690	791	726	530	895	976	1,075	967	1,099
Excavators		3,195	3,287	3,131	3,466	4,074	4,516 c/	6,254 c/	8,640 c/	9,169 c/	9,163	11,622	14,911
0.15 0.25 to 0.30 0.35 to 0.75 1 2 3 to 6 Esh-4/40 Esh-14/75 10 or more	E-153 E-258 E-651 E-1003 E-2001 Esh-4/40 Esh-14/75	467 2,008 490 1 227 3 4	474 2,166 473 510 2 170 179 3	456 1,981 541 2 179 148 3 3	642 2,127 541 632 6 172 220 3 3	725 2,536 649 6 12 21 220 3 3	175 903 2,554 618 12 21 262 1 1	1,559 678 3,115 618 21 40 275 5 5	3,429 1,270 2,941 680 40 60 275 4 4	3,512 1,331 3,245 601 60 60 316			
Bulldozers Scrapers, tractor-drawn Motor graders	D-271 D-222 D-265	3,788 2,089 20	3,516 3,392 40	4,475 3,392 44	5,794 4,144 219	6,669 3,067 607	7,511 2,025 1,014	9,520 1,991 1,646	10,429 2,500 2,064	11,260 2,660 2,663	11,983 2,398 2,835	12,850 3,094 3,135	16,364 3,982 3,135

Table 3
(Continued)

Item	Model	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941		
9. Hoist-transport equipment (units)																									
Railroad cranes	PK-PUM 3-15 (S-254)	478	603	635	696	715	641	344	321	400	405	444	444	444	444	444	444	444	444	444	444	444	444		
Truck cranes	K-51	4,152	3,555	3,321	4,808	4,026	5,505	5,590	6,270	6,867	7,079	6,335	6,335	6,335	6,335	6,335	6,335	6,335	6,335	6,335	6,335	6,335	6,335		
Tower cranes	T-158	1,199	1,962	2,324	2,747	3,119	3,329	2,815	3,470	4,241	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529		
Pneumatic tire cranes																									
Elevators	K-102	1	8	39	70	95	112	261	404	475	693	835	835	835	835	835	835	835	835	835	835	835	835		
10. Metallurgical, mining, fuel-refining, and chemical equipment		466	859	932	1,411	1,613	1,975	2,839	3,340	4,155	2,899	3,365	3,365	3,365	3,365	3,365	3,365	3,365	3,365	3,365	3,365	3,365	3,365		
Metallurgical equipment, excluding rolling mills (thousand tons)																									
Rolling mill equipment (thousand tons)		45.1	45.5	54.1	58.2	59.5	63.6	65.9	71.1	89.2	98.2	97.7	97.7	97.7	97.7	97.7	97.7	97.7	97.7	97.7	97.7	97.7	97.7		
Coal combines (units)	Dombass-1	66.1	64.2	69.4	87.5	94.2	108.5	111.3	96.1	86.9	102.6	120.6	120.6	120.6	120.6	120.6	120.6	120.6	120.6	120.6	120.6	120.6	120.6		
Coal-cutting machines (units)		344	353	320	403	483	731	793	910	1,123	1,106	881	881	881	881	881	881	881	881	881	881	881	881		
Rock-loading machines (units)		900	771	666	751	376	405	463	875	973	741	350	350	350	350	350	350	350	350	350	350	350	350		
Electric mine locomotives (units)		986	952	1,182	1,155	1,621	1,965	2,304	2,255	2,561	2,773	2,773	2,773	2,773	2,773	2,773	2,773	2,773	2,773	2,773	2,773	2,773	2,773		
Petroleum equipment (refinery) (thousand tons)		2,305	2,083	2,007	1,809	2,031	1,816	2,147	2,744	3,421	3,729	3,921	3,921	3,921	3,921	3,921	3,921	3,921	3,921	3,921	3,921	3,921	3,921		
Deep well pumps (thousand units)		47.9	70.9	102.6	121.3	86.2	48.8	49.3	60.1	70.9	76.5	93.0	93.0	93.0	93.0	93.0	93.0	93.0	93.0	93.0	93.0	93.0	93.0		
Turbodrills (units)		65.7	78.3	91.1	92.8	88.4	79.7	79.9	86.2	88.0	95.3	81.8	81.8	81.8	81.8	81.8	81.8	81.8	81.8	81.8	81.8	81.8	81.8		
Chemical equipment (thousand tons)		978	1,370	2,296	2,724	2,895	2,589	2,772	3,489	4,213	4,898	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222		
Chemical equipment (million rubles)		42.9	60.0	76.6	95.3	108.1			761	837	1,003	1,120	1,727	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0	2,259.0

Table 3

USSR: Output of Civilian Machinery
1950-61
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
11. Textile, leather, and publishing industry equipment													
Textile													
Carding machines for cotton (units)		2,228	2,664	2,119	2,167	2,436	1,800	1,400	1,165	1,126	1,744	1,894	2,094
Spinning machines (units)		1,958	1,614	1,771	1,729	1,889	2,040	1,666	1,877	1,065	2,147	2,679	3,341
Reeling machines, excluding silk reeling (units)		169	207	284	261	253	235	258	218	176	245	244	275
Looms (thousand units)		8.7	7.2	10.0	10.2	17.3	16.0	14.0	14.5	14.4	16.0	16.5	18.9
Circular hosiery automatics (units)	KAS-22	1,072	1,164	958	1,100	1,150	918	1,430	1,612	1,025	1,063	1,040	1,524
Industrial sewing machines (thousand units)		35.9	34.9	35.6	48.5	49.0	49.4	58.3	72.9	89.2	96.6	103.5	110.7
Equipment for leather footwear industry (units)													
Fleaching machines		78	106	75	61	86	98	162	197	47	153	118	
Printing machines		200	310	0	10	100	222	160	200	181	143	156	
Publishing (units)													324
Typesetting machines		355	376	227	216	328	457	579	681	858	1,001	1,201	
Plated printing presses		821	885	971	1,140	923	767	1,009	1,092	1,114	1,145	1,175	984
12. Consumer durables (thousand units)													
Refrigerators		1.2	15.0	31.1	49.2	94.0	151.4	224.0	308.9	359.6	426.1	529.5	
Washing machines		0.3	1.9	4.3	3.5	45.7	87.0	195.4	377.4	463.7	647.8	895.5	1,285.6

Table 3
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
12. Consumer durables (Continued)													
Vacuum cleaners	6.1	15.3	22.5	45.5	131.6	130.9	174.7	261.7	245.2	367.5	453.8	497.4	
Sewing machines	501.7	668.0	804.5	993.2	1,280.5	1,610.9	1,913.5	2,266.9	2,685.8	2,911.0	3,096.0	3,220.0	
Cameras	260.3	357.2	459.1	499.1	767.9	1,022.5	1,194.6	1,322.0	1,472.3	1,616.0	1,764.0	1,396.0	
Clocks and watches	7,566	9,645	10,486	12,838	16,397	19,705	22,585	23,508	24,771	26,187	26,038	26,038	
Electric irons	507.7	771.3	1,166.8	1,712.7	3,778.2	5,905.5	1,759.3	1,654.6	2,144.0	3,408.0	5,006.0	7,120.0	
Electric hot plates	1,689.3	1,955.1	2,238.3	3,000.6	3,876.6	4,584.0	4,192.0	3,473.0	4,309.0	5,358.0	6,875.0	7,834.0	
Electric tea and coffee pots	153.8	157.2	205.6	242.4	327.2	485.0	363.2	91.1	81.0	105.0	103.0	158.0	
Food grinders	1,393	1,744	2,028	1,413	1,251	1,165	1,124	1,335	2,019	3,173	4,878	5,572	
Motorcycles	123.1	125.1	104.4	143.3	205.9	249.5	297.0	336.5	400.1	499.5	552.7	588.3	
Bicycles	649.3	1,157.2	1,650.4	1,902.7	2,383.5	2,883.8	3,119.9	3,317.8	3,651.0	3,275.0	2,783.0	2,859.0	
Kerosene burners	1,365	1,322	1,558	2,172	3,132	4,922	6,290	6,399	5,833	4,149	3,791.0	3,477.0	
13. Electronics													
Radios and radio phonographs (thousand units)	1,072	1,233	1,295	1,641	2,894	3,549	3,772	3,550	3,902	4,035	4,165	4,228	
Television sets (thousand units)	12	25	37	84	254	495	596	708	979	1,277	1,726	1,726	
Electron tubes (million units)	24.5	31.8	39.2	50.4	61.7	76.6	89.6	98	110	119	125	125	
Semiconductors (million units)	0.03	0.08	0.29	1.26	1.9	2.4	7	20	36	50	70	96	
14. Sanitary technical equipment													
Heating boilers (thousand square meters)	349	472	555	626	779	915	1,057	1,237	1,316	1,416	1,548	1,760	
Heating radiators (million square meters)	4.8	5.7	6.3	6.7	6.9	7.8	8.5	9.5	11.3	13.7	16.7	19.3	

Table 3
USSR: Output of Civilian Machinery
1950-61
(Continued)

Item	Model	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
14. Sanitary technical equipment (Continued)													
Sewer pipe and fittings (thousand tons)		79.9	104.3	125.3	148.3	149.8	132.9	150.5	170.4	196.1	228.1	254.9	278.4
Enamelled bathtubs (thousand units)		82	104	137	179	230	321	375	428	516	608	715	826
Bath water heaters (thousand units)		54	60	77	79	126	198	247	331	393	516	613	656
15. Civilian aircraft (units)													
Piston													
Li-2	55	55	50	50									
Il-12	50	35	25	70	150	190	230	250	150				
Il-14													
High-performance													
16. Civilian shipbuilding	/												

a. For 1950-52, saw filing machines are not included in the total production of metalcutting machine tools.
 b. Regional production is not included in the total.
 c. Disaggregation of most recent handbook data for single-bucket excavators.
 d. See Appendix C.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)

Item	Sources of Production Data
I. Boilers	
1. Steam boilers (high capacity, 40 tons of steam per hr or over)	<u>1954</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Promyshlennost'</u> SSSR (Industry of the USSR), Moscow, 1957, p. 218-219. (hereafter referred to as <u>Industry</u>). Boiler production in square meters.
2. Steam boilers (medium capacity, 10 to 40 tons of steam per hr)	<u>1950-53</u> , <u>Ibid</u> . Boiler production in square meters is converted to ton-hours by 1954 relations.
3. Steam boilers (low capacity, 10 tons of steam per hr or less)	<u>1955-61</u> , Aggregate boiler production in USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1959 godu</u> (National Economy of the USSR in 1959), Moscow, 1960, p. 214. (hereafter referred to as <u>National Economy, 1959</u>). Also <u>Narodnoye khozyaystvo SSSR v 1961 godu</u> (National Economy of the USSR in 1961), Moscow, 1962, p. 225. (hereafter referred to as <u>National Economy, 1961</u>). Disaggregated by breakdown given in RSFSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Promyshlennost'</u> RSFSR (Industry of the RSFSR), Moscow, 1961, p. 140. (hereafter referred to as <u>RSFSR Industry, 1960</u>). RSFSR production was more than 95 percent of total boiler production in each year.
II. Electric power equipment	
1. Steam and gas turbines	<u>1950-61</u> , Total turbine production in <u>National Economy, 1961</u> , p. 226. Breakdown into steam and gas turbines and hydraulic turbines for 1950-55 based on data in <u>Industry</u> , p. 216. For 1956 and 1957 breakdown based on plan fulfillment, <u>Pravda</u> , 27 Jan 1958, p. 1. Proportions for 1958 and 1959 were estimated on basis of data in RSFSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo RSFSR</u>

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
2. Hydraulic turbines	<u>v 1958 godu</u> (National Economy of the RSFSR in 1958), Moscow, 1959, p. 25 and 71. (hereafter referred to as <u>RSFSR National Economy, 1958</u>)
3. Generators for steam turbines (turbogenerators)	1960-61, proportion from <u>RSFSR Industry, 1960</u> , p. 7. <u>1950-61, Ibid.</u> <u>1950-55, Industry</u> , p. 214-215. <u>1956-59, Estimate based on data in RSFSR National Economy, 1958</u> , p. 70; in RSFSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo RSFSR v 1960 godu</u> (National Economy of the RSFSR in 1960), Moscow, 1961, p. 114; and in <u>National Economy, 1959</u> , p. 214. Determined by estimating generators for hydraulic turbines, of which the RSFSR is the major producing region. Generators for steam turbines derived as residual.
4. Generators for hydraulic turbines	<u>1960-61, National Economy, 1961</u> , p. 225. <u>1950-61, Ibid.</u>
5. Electric motors over 100 kw	<u>1950-55, Industry</u> , p. 214-215. <u>1956-57, National Economy, 1959</u> , p. 214. <u>1958-61, National Economy, 1961</u> , p. 225.
6. Power transformers	<u>1950-54, Industry</u> , p. 214-215. 1955, USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1958 godu</u> (National Economy of the USSR in 1958), Moscow, 1959, p. 236-237. (hereafter referred to as <u>National Economy, 1958</u>) <u>1956-57, National Economy, 1959</u> , p. 214. <u>1958-61, National Economy, 1961</u> , p. 225.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
7. Electric bulbs	<u>1950-55</u> , <u>Industry</u> , p. 214-215. <u>1956-57</u> , <u>National Economy, 1959</u> , p. 214. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 225.
III. Metalcutting machine tools	
1. Lathes	<u>1950-55</u> , <u>Industry</u> , p. 208-209. <u>1956-57</u> , <u>National Economy, 1959</u> , p. 211. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 223. <u>1950-61</u> , <u>Ibid.</u>
2. Turret lathes	<u>Ibid.</u>
3. Automatic and semi-automatic lathes	<u>Ibid.</u>
4. Plano-milling machines	<u>Ibid.</u>
5. Gear-making machines	<u>Ibid.</u>
6. Jig-boring machines	<u>Ibid.</u>
7. Planers	<u>Ibid.</u>
8. Shapers	<u>Ibid.</u>
9. Slotters	<u>Ibid.</u>
10. Horizontal broaching machines	<u>Ibid.</u>
11. Internal grinding machines	<u>Ibid.</u>
12. Drill grinders	<u>Ibid.</u>
13. Vertical drills	<u>Ibid.</u>
14. Radial drills	<u>Ibid.</u>
15. Special, specialized, and unit type	<u>Ibid.</u>
16. Grinders, polishers, and bolt threaders	<u>Ibid.</u>
IV. Railroad machine building	
1. Mainline freight cars, four-axle	<u>1950-55</u> , <u>Industry</u> , p. 222, models are reported.
a. Refrigerator cars	<u>1956-57</u> , Aggregates for all freight cars, <u>National Economy, 1959</u> , p. 215.
b. Boxcars	<u>1958-61</u> , <u>National Economy, 1961</u> , p. 226.
c. Flatcars	It is estimated that no two-axle cars were produced after 1951.
d. Gondolas	
e. Tank cars	
f. Cement cars	

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
2. Rail passenger cars	
a. Mainline passenger cars	1950-55, <u>Industry</u> , p. 220. 1956-57, <u>National Economy</u> , 1959, p.215. 1958-61, <u>National Economy</u> , 1961, p.226.
b. Trolley cars	1950-61, <u>Ibid</u> .
c. Subway cars	<u>Ibid</u> .
3. Mainline locomotives	Aggregate production of steam locomotives, diesel locomotives, and electric locomotives.
a. Steam	1950-55, <u>Industry</u> , p. 220.
L	1956-57, <u>National Economy</u> , 1959, p.215.
SO	1958-61, <u>National Economy</u> , 1961, p.226.
LV	Breakdowns by model are estimates in every case. For methodology used to estimate model breakdowns, see Appendix C.
b. Diesel	
TE-1	
TE-2	
TE-3	
c. Electric	
VL22 ^m	
VL23	
N-8	
N-60	
V. Motor vehicles	Aggregates of automobiles, trucks, and buses 1950-61, <u>National Economy</u> , 1961, p. 227.
1. Passenger cars	1950-61, <u>National Economy</u> , 1961, p. 227.
2. Trucks	1950-55, <u>Industry</u> , p. 223. 1956, USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Dostizheniya Sovetskoy vlasti za 40 let v tsifrahk</u> (Achievements of Soviet Power During 40 Years in Figures), Moscow, 1957, p. 70.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
2. Trucks (Continued)	<u>1957-61</u> , Proportions of trucks to combined trucks and buses total vehicles in RSFSR Industry, 1960, p. 144 (see I, 3, above), is applied to total of trucks and bus vehicles as reported in National Economy, 1961, p. 227.
3. Buses	<u>1950-56</u> , The difference between the motor vehicles total and combined data for passenger cars and trucks as reported in Industry, p. 223, for 1950-55 and Achievement, p. 70, for 1956 (see V, 2, above). <u>1957-61</u> , Proportion of buses to total motor vehicles in RSFSR Industry, 1960, p. 144, is applied to total for the USSR reported in National Economy, 1961, p. 227. Combined bus and truck totals for 1957-61 as reported in National Economy, 1961, p. 227, are checked against estimates derived from the proportions. For fuller explanation of disaggregation of subgroups and discussion of technical characteristics of various models, see Appendix C.
VI. Tractors	Tractors reported by tracklaying and wheeled categories for all years, 1950-61. Model disaggregation for tracklaying reported only for 1950-55; 1956-61 no model breakdown shown except as noted below. <u>1950-55</u> , Industry, p. 228-229, except as noted below. <u>1956-57</u> , National Economy, 1959, p. 217. <u>1958-61</u> , National Economy, 1961, p. 228.
1. Tracklaying	
a. DT-54	
b. KD-35	
c. KDP-35, KDP-38	<u>1956-59</u> , Estimates derived from ratio of output to deliveries to agriculture as reported in USSR, Tsentral'noye Statisticheskoye Upravleniye. Sel'skoye khozyaystvo SSSR (Agriculture of the USSR), Moscow, 1960, p. 419. (hereafter referred to as Agriculture)

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
d. KT-12A	
e. ASKhTZ-NATI	<u>1950-52</u> , Dodge, Norton. <u>Trends in Labor Productivity in the Soviet Tractor Industry</u> , Cambridge, 1960, p. 636. (Unpublished Ph.D. dissertation)
f. S-80	<u>1950-55</u> , <u>Ibid.</u>
2. Wheeled	Model breakdown for all years, 1950-59. <u>1950-55</u> , <u>Industry</u> , p. 228-229, except as noted below. <u>1956-59</u> , Estimates based on deliveries to agriculture, <u>Agriculture</u> , p. 419 (see VI, 1, c, above). No model breakdown after 1959.
a. U-1, U-2, U-3, U-4	
b. KhTZ-7	
c. Belarus (MTZ-1, MTZ-2, MTZ-5)	
d. DT-24	
e. DT-14	
f. DT-28	
g. International 15/30	<u>1950</u> , Dodge, <u>op. cit.</u> (see VI, 1, e, above), p. 635.
h. All others	Residual of wheeled tractors estimated by deducting from total of wheeled tractors for 1956-58 in <u>National Economy, 1959</u> , p. 217, and for 1959 in <u>National Economy, 1960</u> , p. 262, the aggregate of model output estimated by deliveries to agriculture. For fuller discussion of technical characteristics of tractors entered into production after 1955 and details of estimating, see Appendix C.

VII. Agricultural machine building

1. Combines, grain, tractor-drawn	Total grain combines produced: <u>1950-55</u> , <u>Industry</u> , p. 230-231. <u>1956-59</u> , <u>National Economy, 1959</u> , p. 218. <u>1960-61</u> , <u>National Economy, 1961</u> , p. 229.
2. Combines, grain, self-propelled	Self-propelled production estimates for: <u>1950</u> , <u>1955</u> , <u>Yezhegodnik bol'shoy Sovetskoy entsiklopedii, 1957</u> (Annual, Great Soviet Encyclopedia, 1957), Moscow, 1957, p. 52.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
 (Continued)

Item	Sources of Production Data
	<u>1951</u> , <u>Izvestiya</u> , 29 Jan 52. (Delivered) <u>1952</u> , <u>Pravda</u> , 23 Jan 53. (Delivered) <u>1953</u> , <u>Izvestiya</u> , 31 Jan 54. (Delivered) <u>1954</u> , <u>Pravda</u> , 21 Jan 55. <u>1956</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>SSSR v tsifrah v 1959 godu</u> (USSR in Figures, 1959), Moscow, 1960, p. 78.
	<u>1957-59</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>SSSR v tsifrah v 1960 godu</u> (USSR in Figures, 1960), Moscow, 1961, p. 131. Difference between self-propelled and total for all years is tractor-drawn.
3. Combines, corn	<u>1951-55</u> , <u>Industry</u> , p. 230-231. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 218. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 229.
4. Combines, flax	<u>1950-54</u> <u>Industry</u> , p. 230-231.
5. Combines, potato	<u>1950-55</u> , <u>Industry</u> , p. 230-231. <u>1956</u> , <u>RSFSR za 40 let, statisticheskiy sbornik</u> (RSFSR During 40 Years, Statistical Handbook), Moscow, 1957, p. 40.
6. Combines, beet	<u>1950-55</u> , <u>Industry</u> , p. 230-231. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 218. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 229.
7. Combines, ensilage	<u>1950-61</u> , <u>Ibid.</u>
8. Cotton pickers	<u>1950-55</u> , <u>Industry</u> , p. 230-231. <u>1956</u> , <u>Statisticheskoye Upravleniye Uzbekskoy SSR. Narodnoye khozyaystvo Uzbekskoy SSR</u> (National Economy of the Uzbek SSR, 1957), Tashkent, 1957, p. 34. <u>1957</u> , Based on plan fulfillment data, 1st 6 months, <u>Pravda</u> , 11 Aug 57.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
	<u>1958</u> , Statisticheskoye Upravleniye Uzbekskoy SSR. Narodnoye khozyaystvo Uzbekskoy SSR (National Economy of the Uzbek SSR, 1958), Tashkent, 1958.
	<u>1959</u> , Based on plan fulfillment data in <u>Pravda vostoka</u> , 27 Jan 60.
9. Windrowers	<u>1950-55</u> , <u>Industry</u> , p. 230-231. <u>1956-57</u> , <u>National Economy, 1959</u> , p. 218. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 229.
10. Pickups, for grain combines	<u>1955-56</u> , based on Plan Fulfillment data in <u>Pravda</u> , 31 Jan 57. <u>1957-59</u> , based on deliveries to agriculture. <u>Agriculture</u> , p. 419 (see VI, 1, c, above).
11. Plows, moldboard, tractor-drawn and mounted	<u>1950-55</u> , <u>Industry</u> , p. 230-231. <u>1956-57</u> , <u>National Economy, 1959</u> , p. 218. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 229.
12. Harrow-plows, tractor-drawn	<u>1950-61</u> , <u>Ibid.</u>
13. Harrows, tractor-drawn	<u>Ibid.</u>
14. Cultivators, tractor-drawn and mounted	<u>Ibid.</u>
15. Sowing machines, tractor-drawn and mounted	<u>Ibid.</u>
16. Potato planters, tractor-drawn	<u>Ibid.</u>
17. Mowing machines, tractor-drawn and mounted	<u>Ibid.</u>
18. Rakes, tractor-drawn	<u>Ibid.</u>
19. Threshing machines, complex and semicomplex	<u>Ibid.</u>
20. Grain cleaning machines	<u>Ibid.</u>
21. Cutters, straw-ensilage	<u>1950-59</u> , <u>Ibid.</u> Where models are designated, representative models may not have been produced all years.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
VIII. Construction and road work equipment	For discussion of this category, see Appendix C.
1. Multibucket excavators	<u>1950-55</u> , <u>Industry</u> , p. 234-235.
2. Single-bucket excavators (bucket capacity in cu m)	<u>1956-57</u> , <u>National Economy</u> , 1959, p. 219. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 229. <u>1950-54</u> , Total for single-bucket excavators, <u>Industry</u> , p. 236. <u>1955</u> , <u>1958-59</u> , <u>National Economy</u> , 1960, p. 294.
0.15	<u>1956-57</u> , <u>National Economy</u> , 1958, p. 247.
0.25 to 0.30	Size breakdowns are taken from the same sources, with 1955 and 1958 adjusted to reflect the most recent totals. No desegregation for 1959-61.
0.35 to 0.75	
1	
2	
3 to 6	
10 or more	
3. Bulldozers	<u>1950-55</u> , <u>Industry</u> , p. 234-235. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 219. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 229.
4. Tractor-drawn scrapers	<u>1950-61</u> , <u>Ibid.</u>
5. Motor graders	<u>Ibid.</u>
IX. Hoist-transport equipment	
1. Railroad cranes	<u>1950-55</u> , <u>Industry</u> , p. 237. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 220. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 230.
2. Truck cranes	<u>1950-61</u> , <u>Ibid.</u>
3. Tower cranes	<u>1950-52</u> , <u>1954</u> , <u>Industry</u> , p. 237. <u>1953</u> , <u>1955-57</u> , <u>National Economy</u> , 1958, p. 248.
4. Pneumatic tire cranes	<u>1958-61</u> , <u>National Economy</u> , 1961, p. 230. <u>1950-55</u> , <u>Industry</u> , p. 237. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 220. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 230.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
5. Elevators	<u>1950-54</u> , <u>Industry</u> , p. 237. <u>1955-57</u> , <u>National Economy</u> , <u>1958</u> , p. 248. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 230.
X. Metallurgical, mining, fuel-refining, and chemical equipment	
1. Metallurgical equipment, excluding rolling mills	<u>1950-55</u> , <u>Industry</u> , p. 212-213. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 213. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 225.
2. Rolling mill equipment	<u>1950-59</u> , <u>Ibid.</u>
3. Coal combines	<u>Ibid.</u>
4. Coal-cutting machines	<u>Ibid.</u>
5. Rock-loading machines	<u>1950-54</u> , <u>Industry</u> , p. 212-213. <u>1955</u> , <u>National Economy</u> , <u>1958</u> , p. 235. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 213. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 225.
6. Electric mine locomotives	<u>1950-55</u> , <u>Industry</u> , p. 212-213. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 213. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 225.
7. Petroleum equipment (refinery)	<u>1950-61</u> , <u>Ibid.</u>
8. Deep well pumps	<u>Ibid.</u>
9. Turbodrills	<u>Ibid.</u>
10. Chemical equipment	<u>1950-54</u> , <u>Industry</u> , p. 212-213. <u>1955</u> , <u>1958-60 National Economy</u> , <u>1960</u> , p. 289 <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 213. <u>1961</u> , <u>National Economy</u> , <u>1961</u> , p. 225.
XI. Textile, leather, and publishing industry equipment	
1. Carding machines for cotton	<u>1950-55</u> , <u>Industry</u> , p. 234-235. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 219. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 230.
2. Spinning machines, excluding machines for synthetic fibers	<u>1950-61</u> , <u>Ibid.</u>

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
3. Reeling machines, excluding silk reeling	<u>Ibid.</u>
4. Looms	<u>Ibid.</u>
5. Circular hosiery automatics	<u>Ibid.</u>
6. Industrial sewing machines	<u>1950, 1953, 1955, National Economy, 1958,</u> <u>p. 246.</u> <u>1951-52, 1954, Industry, p. 234-235.</u> <u>1956-57, National Economy, 1959, p. 219.</u> <u>1958-61, National Economy, 1961, p. 230.</u>
7. Fleshing machines	<u>1950-55, Industry, p. 234-235.</u> <u>1956-57, National Economy, 1959, p. 219.</u> <u>1958-61, National Economy, 1961, p. 230.</u>
8. Tieing machines	<u>1950-61, Ibid.</u>
9. Typesetting machines	<u>Ibid.</u>
10. Flatbed printing presses	<u>Ibid.</u>
XII. Consumer durables	
1. Refrigerators	<u>1950-55, Industry, p. 363.</u> <u>1956-57, National Economy, 1959, p. 265.</u> <u>1958-61, National Economy, 1961, p. 262.</u>
2. Washing machines	<u>1950-61, Ibid.</u>
3. Vacuum cleaners	<u>Ibid.</u>
4. Sewing machines	<u>1950-55, Industry, p. 362.</u> <u>1956-58, National Economy, 1958, p. 298.</u> <u>1959-61, National Economy, 1961, p. 262.</u>
5. Cameras	<u>1950-55, Industry, p. 362.</u> <u>1956-58, National Economy, 1958, p. 300.</u> <u>1959-61, National Economy, 1961, p. 262.</u>
6. Clocks and watches	<u>1950-55, Industry, p. 362.</u> <u>1956-57, National Economy, 1959, p. 265.</u> <u>1958-61, National Economy, 1961, p. 262.</u>
7. Electric irons	<u>1950-55, Industry, p. 363.</u> <u>1956-57, National Economy, 1958, p. 299.</u> <u>1958-61, National Economy, 1961, p. 262.</u>

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
(Continued)

Item	Sources of Production Data
8. Electric hot plates	<u>1950-55</u> , Industry, p. 363. <u>1956-57</u> , National Economy, 1959, p. 265. <u>1958-61</u> , National Economy, 1961, p. 262.
9. Electric tea and coffee pots	<u>1950-55</u> , Industry, p. 363. <u>1956-57</u> , National Economy, 1958, p. 299. <u>1958-61</u> , National Economy, 1961, p. 262.
10. Food grinders	<u>1950-55</u> , Industry, p. 364. <u>1956-57</u> , National Economy, 1959, p. 265. <u>1958-61</u> , National Economy, 1961, p. 262.
11. Motorcycles	<u>1950-55</u> , Industry, p. 362. <u>1956-57</u> , National Economy, 1959, p. 265. <u>1958-61</u> , National Economy, 1961, p. 262.
12. Bicycles	<u>1950-55</u> , Industry, p. 362. <u>1956-58</u> , National Economy, 1958, p. 298. <u>1959-61</u> , National Economy, 1961, p. 262.
13. Kerosene burners	<u>1950-55</u> , Industry, p. 364. <u>1956-57</u> , National Economy, 1959, p. 265. <u>1958-61</u> , National Economy, 1961, p. 262.
XIII. Electronics	Detailed discussion of estimates for all electronics in Appendix C.
1. Radio and television sets	<u>1950</u> , <u>1953</u> , National Economy, 1958, p. 300. <u>1951-52</u> , <u>1954</u> , Industry, p. 363. <u>1955</u> , National Economy, 1960, p. 340. <u>1956-57</u> , National Economy, 1959, p. 265. <u>1958-61</u> , National Economy, 1961, p. 262.
2. Electron tubes	Data for all years from: <u>Radio</u> , Feb 56, p. 3. <u>Radio</u> , Jul 56, p. 3. <u>Pravda</u> , 28 Jan 58. <u>Pravda</u> , 16 Jan 59. <u>Pravda</u> , 22 Jan 60. <u>Pravda</u> , 26 Jan 61.
3. Semiconductors	<u>1951-56</u> , <u>Radio</u> , Jul 56, p. 3; Sovetskaya Estoniya, 7 Jul 56; <u>Vestnik svyazi</u> , Aug 56, p. 4. <u>1957</u> , Izvestiya, 7 May 57. <u>1958</u> , Znaniye-sila, Aug 58.

Table 4

Documentation for Output of Civilian Machinery (in Table 3)
 (Continued)

Item	Sources of Production Data
	<u>1959</u> , Derived from Seven Year Goals -- <u>Radiotekhnika</u> , May 59.
	<u>1960</u> , <u>Vneshnyaya torgovlya</u> , Dec 59, p. 40.
	<u>1961</u> , Derived from Seven Year Goals -- <u>Radiotekhnika</u> , May 57.
XIV. Sanitary technical equipment	
1. Heating boilers	<u>1950-54</u> , <u>Industry</u> , p. 316. <u>1955-57</u> , <u>National Economy</u> , <u>1958</u> , p. 271. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 247.
2. Heating radiators	<u>1950-52</u> , <u>1954</u> , <u>Industry</u> , p. 316. <u>1953</u> , <u>1955-57</u> , <u>National Economy</u> , <u>1958</u> , p. 271. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 247.
3. Sewer pipe and fittings	<u>1950-55</u> , <u>Industry</u> , p. 316. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 244. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 247.
4. Enameled bathtubs	<u>1950</u> , <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 244. <u>1951-55</u> , <u>Industry</u> , p. 316. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 247.
5. Bath water heaters	<u>1950-55</u> , <u>Industry</u> , p. 316. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 244. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 247.
XV. Civilian aircraft	For discussion of estimates, see Appendix C. <u>1950-61</u> , Inventories of piston aircraft and high-performance aircraft derived from Aeroflat schedules.
XVI. Civilian shipbuilding, excluding inland vessels	For discussion of estimates, see Appendix C. <u>1950-61</u> , Data from multiple sources including Commerce, Maritime Administra- tion. <u>Merchant Fleets of the World</u> , twice annually.

APPENDIX C

DESCRIPTION OF THE CIVILIAN MACHINERY SAMPLE (IN TABLE 3)

- 51 -

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DESCRIPTION OF THE CIVILIAN MACHINERY SAMPLE (IN TABLE 3)

The purpose of this appendix is to describe the production data of the civilian machinery sample. Where information on product mix was available, models or representative items were first aggregated into industrial categories such as wheeled tractors or diesel locomotives. The latter groups were then combined into major branches of machine building, comparable with the official categories. 1/* Product coverage varied from a few items to estimates of the entire output of a branch. Where data have been adjusted in order to derive consistent series, the estimating procedures are discussed below in some detail.

I. Boilers

Included in this branch are steam boilers whose primary use is the supply of steam for industrial power, mainly for generation of electricity. There were several discontinuities in the published series. A change in the reporting of physical output from square meters of heating surface to tons of steam capacity per hour necessitated some adjustment of the data. Because steam boilers operate at different temperatures and pressures, there is no direct relationship between these two measures.

A comparable series for total output of steam boilers in ton-hours for the 1950-61 period was obtained in the following manner. Square meter output by three size classes -- less than 10 tons of steam per hour capacity, more than 40 tons of steam per hour capacity, and boilers with a capacity intermediate to these two measures, was reported for the 1950-54 period. 2/ Total steam capacity for each size class was also reported for 1954. 3/ 1950-53 output was estimated in steam capacity for each size class by linking indexes of square meters to the 1954 steam capacity. After 1955, when only total production in tons of steam capacity was reported, disaggregation into three size classes was based on the breakdown of boiler output in the RSFSR, which produced more than 95 percent of USSR boiler output for this period. 4/

II. Electric Power Equipment

The sample for this branch includes steam, gas, and hydraulic turbines; generators; electric motors rated more than 100 kw; power transformers; and electric light bulbs. Electric motors of less than 100 kw are not included in the sample. It is assumed that most of the smaller motors are components for other sample items such as machine tools, motor vehicles, and consumer durables.

* For serially numbered source references, see Appendix O.

For the years 1950-55, turbine production was reported both in number of units and in total capacity. The average size was computed for each year by dividing total capacity by the number of machines produced. Production for 1955 through 1961 was announced in capacity only. 5/ The average size of turbines for these years was assumed to be the same as that for 1955. Similarly, average sizes were estimated for generators and large electric motors. For power transformers the average size of unit was estimated by analogy with the US. The product coverage of the electric power equipment sample was one of the poorest in the machinery sector. 6/

III. Metalcutting Machine Tools

This sample is a component of the official category stankostroyeniye, which includes metalcutting machine tools, forge-press machines, foundry equipment, cutting tools, and abrasives.

The metalcutting machine tool sample consists of 16 items for which output data are available for all years in the Soviet statistical handbooks. Representative models have been chosen for each classification except the category of special, specialized, and unit-type machine tools (spetsial'nyye, spetsializirovannyye i agregatnyye). This category is actually three different machine groups. A special machine is designed to perform only a few machine operations on a definite piece. It is limited to working on a narrow range of material types and dimensions. Specialized machines, which were more widely used during the 1950-61 period, perform only one type of operation. These machines work on a wider range of sizes and shapes of objects as well as on different materials than that of special machines. The unit-type machine is a versatile combination of standard machinery assemblies, such as power heads, feeding mechanisms, control panels. 7/ An average price for the category special, specialized, and unit-type machines was estimated from fragmentary data on three models.

IV. Railroad Machine Building

It is convenient to divide this branch into three categories -- freight cars, locomotives, and passenger cars.

A. Mainline Freight Cars

The sample for railroad freight cars is limited to those for mainline use. Of these, the USSR reported making six types -- box, flat, gondola, tank, cement, and refrigerator cars -- in the period from 1950-55. 8/ For years after 1955, output data by type has not been published, and it has been impossible to estimate the disaggregated output.

The index may understate somewhat production after 1955, for there is evidence of some significant changes in product mix and technology. Changes occurring during 1950-61 include temporary cessation of refrigerator car production, increase in the size of railroad cars produced, a shift in emphasis away from open car production, 9/ the use of light metals, and an increase in the percentage of roller bearing trucks. The degree of understatement of the index can not be estimated.

The sample contains, as far as can be determined, all 4-axle, main-line freight cars. Locomotive tenders and possibly some special use cars, such as acid hauling cars and those for carrying gases under pressure, are excluded. Also excluded are repairs, spare parts, and any special equipment that the industry may have produced. The reported output figure for 1951 was adjusted downward by 0.7 percent in order to allow for production judged to be 2-axle cars.

B. Mainline Locomotives

The locomotive industry in the USSR underwent great technical change during the twelve years covered by the index. In 1950, more than 80 percent of the mainline locomotives produced by the USSR were steam-powered. The last steam locomotives reported were produced in 1956, a year in which production of electric locomotives exceeded that of diesels. 10/ In 1961, unit production of diesel locomotives exceeded that of electrics by more than one and one half times. 11/ In addition, it is estimated that several new models of either diesel or electric locomotives have been put into production since 1955. The sample includes all mainline engines but excludes yard locomotives, spare parts, and repair activities.

1. Steam

Available information indicates that three series of steam locomotives, the L, SO, and LV series, were the most important models produced in the period from 1950 to 1956, when production of steam locomotives was discontinued. 12/ Of these, the SO series appears to have been produced as late as 1951, 13/ and the L series until some time in 1954, when the LV models came into production. 14/

On this basis, half of steam locomotive production in 1950 and 1951 was estimated to be most like series L locomotives. The remainder of production in these years was designated as SO locomotives. In the years 1953 and 1954 the L series locomotive was estimated to be the major series produced. After 1954 the LV was the representative unit.

2. Diesel

Output of the three most important diesel engines produced in the USSR in the 1950-61 period, the TE-1, TE-2, and TE-3 models, 15/ can be estimated with fair accuracy. Production of the TE-1 was stopped in July 1950, when the TE-2 went into series of production for the first time. 16/ Data on output for 1950 show that 125 units with a total of 170,000 horsepower (hp) were produced in that year. 17/ The TE-1 is rated at 1,000 hp and the TE-2 at 2,000 hp. 18/ If it is assumed that these were the only models of diesel locomotives produced in 1950, the model mix can be obtained from the following equation:

$$x + y = 125$$

$$1,000 x + 2,000 y = 170,000 \text{ horsepower}$$

where x is the number of TE-1 models produced, at 1,000 horsepower, and y is the number of TE-2 models produced, at 2,000 horsepower.

Output of diesel locomotives in the period 1951 through 1955 was assumed to be the TE-2, the only model known to be in serial production at that time. The TE-3 went into production sometime before January 1957, when more than 150 had already been produced. 19/ From this, and the improved characteristics of the locomotive, 20/ it was assumed that all diesel locomotives produced after 1955 were TE-3 models.

3. Electric

All production of electric locomotives for the years 1950 through 1955 was estimated to be the VL22^m model. 21/ Although some other models were produced in this period, these appear to be small numbers of experimental units. 22/ There is some indication that production of the VL-23 and N-8 models was begun in 1955, 23/ but it is assumed that no output was achieved until 1956. Each model is estimated to be about 10 percent of total production in 1956 and to have increased to 20 percent in 1957 and 40 percent in 1958. In each of these years the remainder of production in 1956-58 was estimated to be the VL22^m, production of which ceased in September 1958. 24/ For 1959, 42 units of the N-60 locomotive were known to have been produced. 25/ The remainder was distributed equally between the VL 23 and N-8 models. No model breakdown was attempted for 1960-61.

C. Rail Passenger Cars

The sample includes mainline passenger cars and two items for intra-urban use -- trolleys and subway cars. Although more than one model of mainline passenger car is produced in the USSR, it was impossible to disaggregate total production.

V. Motor Vehicles

The motor vehicles branch is divided into three subdivisions: passenger cars, trucks, and buses. Although motorcycles, bicycles, and other consumer items are secondary products of the industry, 26/ these are treated as part of the consumer durables industry in the sample.

A. Passenger Cars

Passenger cars, including jeeps, accounted for a much smaller share of the motor vehicles branch in the USSR than in the US. Only a narrow range of basic vehicles was produced in this industry during 1950-59. In Table 5* a profile is given of selected vehicles by type, capacity, plant where produced, and years of production. Lacking information on production by models, a representative item, the four passenger Moskvich 401 sedan, has been selected for all passenger cars. With minor changes and improvements, production of this vehicle spanned the entire period 1947-61.

B. Trucks

During 1950-61 production of trucks, which accounted for about 75 of the industry's output, was similarly distinguished by a few standard models. No small trucks of the fractional ton up to the 2-ton range and almost no larger trucks for pulling semitrailers were produced in the first half of the period. 27/ For model composition, capacity, years of production, and plant were produced, see Table 5. The GAZ 51, a 2.5-ton cargo truck, in production since 1946, was selected as the representative item. Although there is some indication of diversification of production in the latter part of the period, in 1959 two models of medium-size trucks probably accounted for more than 50 percent of the units produced. As of January 1962, nearly 70 percent of the automotive inventory consisted of trucks, more than 90 percent of which was in the 2.5-ton to 4-ton medium load capacity. 28/

C. Buses

Although several models of buses were produced, there were only three basic chassis, two of which were very similar. The representative item for this group is the PAZ (GAZ) 651 chassis type.

VI. Tractors

By 1959 the tractor industry of the USSR turned out 18 different types of tractors, 10 of which were basic models and 8 of which were modifications. 29/

* P. 68, below.

The weight of tractors has been systematically reduced. Output of tractors within the sample has been disaggregated into wheeled and track-laying categories. Characteristics of individual models introduced after 1955 are shown in Table 6.* The tractor index is composed of individual models series for the 1950-55 period, in accordance with data reported in the statistical handbooks and as reported in a major study on the Soviet tractor industry.** 30/ Beginning in 1956, several new tracklaying models were introduced, and some information on their deliveries to agriculture is available but not enough to disaggregate total production.

Estimates of the model mix for wheeled tractors for 1955-59 were based on deliveries to agriculture for the DT-14 and the Belarus. 31/ The difference between the sum of estimated production by deliveries to agriculture and the total of wheeled production is called the all other group. No model breakdown for the wheeled category could be estimated for 1960-61.

VII. Agricultural Machinery

The USSR produces, in response to the range of needs of its agricultural sector, a large variety of agricultural machinery. Generally, it is acceptable to divide agricultural machinery into eight categories, each having several items. The sample for the index has representation in six of these categories. Equipment for soil preparation is represented by plows, harrow plows, and harrows. Planting equipment includes sowing machines and potato planters. Machinery for cultivating the growing crop is another group. Harvesting equipment for fodder and grain have the largest representation, with three types of combines, windrowers, pick-up attachments for grain combines, mowing machines, rakes, and threshing machines. Grain cleaning machines are classified as machinery for handling harvested crops. Specialized equipment used for a limited range of crops is represented in the sample by flax, potato, beet, and ensilage combines; cotton pickers; and cutters for straw and ensilage. The sample does not include barnyard equipment and items used for animal husbandry, such as feeders, waterers, and milking machines.

Some of the agricultural machinery is produced in both horse-drawn and tractor-drawn models, only the latter of which are represented in our sample. The 21 items of agricultural machinery included in the sample are estimated to include about 60 percent of the total Soviet output for 1950-57. Some bias of uncertain direction may be present because account could not be taken of the effect of model changing after 1957 and its near absence before 1957. For example, production of cotton pickers was virtually discontinued in 1958 while a new model was developed. Reorganization and retooling in the industry in 1958 were so great that only 5 of the 19 sample items showed increased output in 1959 over 1958. No adjustment was made in the sample for improvements in models if any, that resulted from these changes.

* P. 73, below.

** This is not a formal classification system but rather is ad hoc, based on different activities of agriculture, to show the range of representation in the sample.

VIII. Construction and Road Work Equipment

The sample for this branch of machinery contains 11 items, 8 of which are excavators of some type. The Soviet authorities are known to classify concrete mixers, stone crushers, tampers, gravel washers, and machinery for the construction materials industry in this branch in addition to those items in the sample. 32/

Output by size for single bucket excavators was available for the 1950-58 period. 33/ The 1955 and 1958 data, however, had to be adjusted when revised aggregate production data for these years were published together with the 1959-61 aggregate output. 34/

IX. Hoist-Transport Equipment

Output of this branch consists of elevators, cranes of all types, conveyors and some smaller items such as winches, tackles, and jacks. 35/ The sample in the index consists of five items -- railroad, truck, tower, and pneumatic tire cranes and elevators. Representative models were selected for each category of equipment.

X. Metallurgical, Mining, Fuel-Refining, and Chemical Equipment

This branch includes production of heavy machinery and equipment for various industries. The sample of 10 items includes machinery for the steel and metallurgical industry, for underground mining, for petroleum extraction and refining, and for the chemicals industry.

Items such as coke ovens, blast furnaces, steel furnaces, and crushing and agglomerating mills are subsumed under metallurgical equipment. Rolling mill equipment may be for hot or cold processing of strip, wire, pipe, and tubes or other shapes. The sample items -- rock-loading machines, electric mine locomotives, coal combines, and coal-cutting machines -- are used in underground mining of coal. Chemical equipment and oil refining equipment, each reported in tons of output from 1950 to 1954, have some common components, such as distilling columns, pumps, compressors, and reaction chambers. The basis for reporting chemical equipment production changed to value of output beginning in 1955, while refinery equipment continued to be reported in tons. 36/

XI. Textile, Leather, and Publishing Industry Equipment

The sample for this branch has 10 items, 6 of equipment for the textile industry, 2 used in leather processing, and 2 for the printing industry. Although the proportion of the sample to the universe is not

known, the ability of a small sample to represent machinery for these three industries is improved by the character of the industries. Each of the three industries involves to a large extent, a cumulative step-like process on homogeneous raw material. For example, all cotton fiber must undergo basically the same steps before the finished textile is obtained. This means that, in the absence of technological change, if the numbers of machines of one type change, the amounts of machinery of types used in other steps of the same production process must be changed in some relatively fixed proportions to maintain the proper balance of production. Because of this constraint in these three lines of production, a sample of machinery used at one stage of production may be representative of the whole.

XII. Consumer Durables

This branch, as a part of machinery, is limited to consumer durable items made wholly or in major part from metal. There are 13 such items included in the sample, 2 of which, cameras and timepieces (including both clocks and watches), are classified as instruments (pribory) by the USSR.^{37/} The sample does not include metal furniture, musical instruments, or household utensils. Radios and television sets have been counted with other consumer electronics.

XIII. Electronics

The USSR has published only fragmentary information on the rates of growth of electronics production. The over-all trend of Soviet electronic equipment for the calculated index is taken to be equal to the trend of components (electronic tubes and semiconductors) production. A ruble series of estimated electron tube and semiconductor production for 1950-61 is inflated by a ratio of 5.72 to 1 to yield an estimated aggregate electronics production series. This series was checked against the following data: (1) plan fulfillment and plan data for the radio-technical industry and (2) radio and TV set production. Data on plan fulfillment and on production of radio and television sets probably can be taken as upper and lower limits, respectively, of aggregate electronics production.

A. Plan Data for Radio-Technical Industry

The plan data are useful as a check on results derived from other data. During the period of the Fifth Five Year Plan, production of the Ministry of the Radio Engineering Industry reportedly increased by 340 percent. The original Sixth Five Year Plan (1956-60) scheduled an increase of 150 percent, and the current Seven Year Plan provided for

a production level of electronic equipment in 1965, three times that of 1958.* 39/ These figures imply average annual rates of growth of 35, 20, and 17 percent, respectively, for the three periods.

B. Production of Radio and Television Sets

Information is available on the number of radio and television sets produced. This sector is economically significant, although it represents only a fraction of the weight of the total industry and, except for a brief period of emphasis on consumer production, has not enjoyed a high production priority.

Physical production of radio and television sets has been highly irregular, increasing 82 percent in 1954, and in 1957 production decreased by 2 percent. An estimate for value of production for 1955 indicates representative factory values of approximately 530 rubles per radio and 1,420 rubles per television set. A value series using these prices shows a higher rate of growth than the unit series because of the rapidly increasing weight of the more expensive television sets. The average annual rate of growth of 21.5 percent for the period can be taken as the minimum for electronics production.

C. Production of Electron Tubes and Semiconductors

Production of electron tubes and semiconductors represents a substantial subsector of the electronics industry. The USSR has published statistical data relating to electron tube and semiconductor production in sufficient detail to permit the construction of unit series for the period under consideration. 40/ From data on the ruble value of losses from rejects and the percent of rejects to production, this unit series can be converted to a value series with 1956 as the base year. 41/ It was stated that in that year losses in the electron tube industry amounted to 260 million rubles and that rejects were about 12 percent of production. An average price was derived from these data and applied to both tubes and semiconductors to derive the value of production for other years.

* Seven Year Plan goals were recently revised to production levels four times that of 1958. 38/

The following series on the value of output of electron tubes and semiconductors was derived:

<u>Year</u>	<u>Billion 1955 Rubles</u>
1950	0.592
1951	0.771
1952	0.955
1953	1.248
1954	1.539
1955	1.910
1956	2.336
1957	2.853
1958	3.530
1959	4.086
1960	4.715
1961	5.876

The average annual rate of growth of electron tubes and semiconductors 1951-61 was 23.2 percent. The rate declined from a high of 30 percent in the early years to about 24 percent in 1958, falling to about 15 to 16 percent in 1959 and 1960. An upturn occurred in 1961, when the growth rate increased to 25 percent.

D. Estimate of the Value of Over-All Production of Electronics

In the US the ratio of value of shipments of end products in the electronics industry to the value of shipments of vacuum tubes and semiconductors has remained quite stable over extended periods, even during the period since the Korean War, when a substantial alteration in the product mix occurred as the transistor began to replace vacuum tubes in a number of applications. ^{42/} In the US, during the period 1952-60 this ratio was 5.72 to 1, with annual variations no greater than 11 percent of this figure. The figure 5.72 was therefore used as a multiplier of the value of output of vacuum tubes and semiconductors in the USSR to obtain the total Soviet electronics industry value series. For 1955 the value of output of electronics was 10.9 billion rubles.

Statements in technical journals over the past decade suggest that the growth in the component subsector lagged somewhat behind that of industry in the first half of the decade and that this created severe shortages of replacement parts and spares in some parts of the industry. After 1955, greater emphasis was placed on development of the component subsector, and it is probable that since 1959 production of vacuum tubes and semiconductors may have grown somewhat faster than total industry as a result of new investment during the Seven Year Plan.

XIV. Sanitary Technical Equipment

In the sample for this branch are five items: heating boilers,

heating radiators, metal sewer pipe and fittings, enameled iron bathtubs, and bath water heaters. These items are all plumbing supplies used in new construction or modernization of existing buildings. They are comparable with the plumbing fixtures of the metal working sector of the FRB indexes. Ceramic sewer tile, output of which also is reported by the USSR, is included in the construction materials industry.

XV. Civilian Aircraft

The value estimates in the index for this branch may have a considerable margin of error. Production estimates for piston and higher performance aircraft were derived from inventories of aircraft at various times. In 1956, Aeroflot claimed it had at least 500 Li-2 aircraft and 900 Il'yushin aircraft, Il-12's and Il-14's. Using these and data for the year ending 9 November 1957, the average daily utilization of Aeroflot aircraft was computed. The average daily utilization rates of 2.54 hours for the Li-2 and 1.70 hours for the Il'yushin aircraft, in conjunction with Aeroflot time schedules, permitted a calculation of an inventory of these aircraft for the summer of 1950, the winter of 1954-55, the year ending 9 November 1957, and the spring of 1960.

Production series were derived from the estimated inventory of Li-2 aircraft and estimated initial and terminal years of production. Production of Li-2's in the early 1950's is assumed to be at a level sufficient for replacement and maintenance of the inventory. It is further assumed that production stopped in 1953 at about the time that quantity production of Il-14's began.

The Il-12 was first displayed in 1946, and production is assumed to have phased out by 1953, when it was supplanted by the Il-14. The Il-14 was first seen in 1953 and is assumed to have stopped production in 1958. Production of high-performance aircraft is known to have begun in 1956. Estimates of high-performance aircraft in use by Aeroflot in the spring of 1960 were derived from the Aeroflot timetable for the spring of 1960.

There was an understatement of some piston production in pre-1955 years when it was known that the Yak-12 was in production. Helicopters are missing from the later years of the series. In 1959, helicopters, especially the Mi-6 (Hook), the largest helicopter in the world, were not included.

Valuation of the Soviet aircraft has been based on US aircraft and learning curve information. Market prices of counterpart US planes in 1958 dollars have been converted by 4.5-to-1 ruble-dollar ratio to 1955 rubles (see the tabulation below). An adjustment of 10 percent of the

value was made in order to exclude electronic equipment (counted elsewhere) installed in civilian aircraft.

**Comparison of the Unit Prices Used for Soviet Aircraft
with the Unit Prices of US Counterpart Aircraft**

<u>Soviet Aircraft</u>	<u>Unit Price in Million 1955 Rubles</u>	<u>US Counterpart</u>	<u>Unit Price in Million 1958 \$</u>
Li-2	1.15	Douglas DC-3	0.26
Il-12	4.00	Martin 202	0.90
Il-14	4.50	Martin 404	1.05
High-performance	19.50	Lockheed Electra	2.2?
		Douglas DC-8	5.46
		Boeing 707.120	4.31
		Boeing 707.320	5.78
		Convair 990	4.78
		Convair 880.22M	4.00

XVI. Civilian Shipbuilding

The USSR does not publish data on either the value or the number of ships completed. For this reason, the value data presented in this report are aggregated from data assembled from multiple sources. Estimated deliveries of maritime and fishing vessels are based on appearance of ships mostly from sightings; descriptions of characteristics from the press; and other information supplied by the US Department of Commerce, Maritime Administration. ^{43/} Because the estimates are necessarily based on final production rather than work in progress and because the production period for new vessels is relatively long, the raw estimates fluctuate rather widely. The implicit production cycle was smoothed by the adjustment of the series to a 2-year moving average. (See the tabulation below.)

Estimated Deliveries of Civilian Ships

Million 1955 Rubles

<u>Year</u>	<u>Unadjusted Series (Excluding Inland Ships)</u>	<u>Adjusted (2-Year Moving Average)</u>
1950	493.6	515.4
1951	537.2	552.0
1952	566.7	593.6
1953	620.6	689.2
1954	757.9	787.9

Estimated Deliveries of Civilian Ships
(Continued)

<u>Year</u>	<u>Unadjusted Series</u> <u>(Excluding Inland Ships)</u>	<u>Adjusted</u> <u>(2-Year Moving Average)</u>	<u>Million 1955 Rubles</u>
1955	817.9		976.2
1956	1134.5		1420.8
1957	1707.2		1368.6
1958	1030.0		1586.6
1959	2143.1		2053.0
1960	1962.8		2245.7
1961	2528.6		2525.4

Vessels are priced in equivalent dollar costs and converted to rubles by ruble-dollar ratio. Costs of maintenance and repair of maritime vessels as estimated indirectly from Soviet sources 44/ is added to the completions data to arrive at the series in the calculated index.

Vessels in the civilian fleet may be transferred to naval jurisdiction for various purposes such as auxiliaries or research vessels. If a vessel is shifted after being in nonmilitary service for a period, the value of output will be overstated, but this does not occur frequently enough to impair the estimates seriously.

Addendum on Spare Parts

A major omission from the index is production of spare and replacement parts for machinery and equipment. The pattern of production of parts for tractors, agricultural machinery, and automobiles is discussed below for selected benchmark years, and some ratios of parts to equipment production are calculated for the US and the USSR. Spare parts are indicative not only of deficiencies in the coverage of the sample in the index but also of uncertainties about quality and quality trends. The trend of spare parts production in the USSR may correlate negatively with the quality of final products. Hence it is doubtful if spare parts should be added to the industrial production index even if a reliable series were available.

The information available relates not to over-all spare parts production but to an unknown fraction thereof -- centralized production of spare parts for tractors, motor vehicles, and agricultural machinery. Centralized production of spare parts for tractors, motor vehicles, and agricultural machinery increased from somewhat more than 1 billion rubles in 1950 to more than 5 billion rubles by early 1958. 45/ The scope of centralized

production appears to be production of spare parts either by shops manufacturing the final machine or by specialized enterprises. Centralized production was not emphasized until after 1955. 46/ As late as 1959 a large proportion of parts was still being produced by numerous small decentralized shops -- that is, the shops operating the equipment produced the parts needed for their own repair operations.

A Soviet writer implies that the three categories, automobiles, agricultural machinery, and tractors, were the only areas of significant centralized production in 1958 and that most of the spare parts for all other machinery and equipment were produced on a decentralized basis by enterprises operating the equipment. 47/ Centralized production of parts, although representing an increasing proportion of aggregate parts production, was insignificant.

In the 1960 Plan, output of spare parts for the park of tractors, automobiles, and agricultural machinery for 1960 was planned at 10.3 billion rubles, or almost 11 percent more than what was produced in 1959. 48/ It is assumed that the 1959-60 benchmark data on spare parts are comparable to the 1950 and 1958 centralized production series. A 1963 statement that production of spare parts for tractors, agricultural machinery, and automobiles is planned to be 11.92 billion rubles, or 10 percent above 1962, 49/ yields the most recent data. The following series for centralized production of spare parts for tractors, agricultural machinery, and automobiles is derived:

<u>Year</u>	<u>Billion 1955 Rubles</u>
1950	1.0
1957	5.0
1959	9.3
1960	10.3 (Plan)
1962	10.8
1963	11.92 (Plan)

A comparison of output of spare parts in 1959-60 with the calculated value of physical units for automobiles, tractors, and agricultural machinery shows the value of parts to be approximately three-fifths of the

value of production.* A Soviet author wrote that by 1962 output of spare parts for automobiles had increased during the past 7 to 8 years by 4.5 times in association with a growth of output of automobiles of 60 percent. 50/

In the US, according to the 1958 Census of Manufactures, parts and attachments accounted for a sizable percent of the value of shipments for the following selected machinery categories:

	<u>Percent</u>
Tractors (agricultural)	34
Farm machinery (excluding tractors)	19
Machine tools	12
Metal machinery	26
Locomotives	38
Textile machinery	52
Construction and mining equipment	30
Motor vehicles a/	17

a. Ratio of replacement parts to complete units.

With the exception of motor vehicles these ratios represent the percent of parts production to combined parts and equipment shipment, and the median would be about 25 percent.

* The aggregate of the value of complete units in 1959 and 1960 is based on the value of output for tractors and motor vehicles from Table 3, of CIA/PR ER 63-29, and the value of total output of agricultural machinery derived from recent Soviet official reports of agricultural machinery production (excluding spare parts). The items are as follows:

	<u>Million 1955 Rubles</u>	
	<u>1959</u>	<u>1960</u>
Motor vehicles	5,263.5	5,585.0
Tractors	4,160.5	4,653.4
Agricultural machinery	6,890.0	7,530.0

Parts as Percent of Total Output

57 58

Table 5
Characteristics of Selected Soviet Motor Vehicles a/*

Designation and Model	Capacity	Years of Production	
		Plant	
Passenger automobiles			
Sedan			
Moskvich 401	4 passengers	MZMA (Moskovskiy Zavod Malolitrazhnykh Avtomobiley)	1947-56
Moskvich 402	4 passengers	MZMA	1956-58
Moskvich 407 (modernization of 402)	4 passengers	MZMA	1958-
Moskvich 410 (on 407 base)	4 passengers	MZMA	1957-58
M20 (Pobeda)	5 passengers	GAZ (Gor'kovskiy Avtozavod)	1946-58
M21 (Volga)	5 passengers	GAZ	1956-57
Limousine			
GAZ-12	6 passengers	GAZ	1950-59
GAZ-13 (Chayka)	7 passengers	GAZ	1959-
ZIL-110	7 passengers	ZIL (Zavod imeni Likhacheva)	1946-58
ZIL-111	7 passengers	ZIL	1959-

* Footnotes for Table 5 follow on p. 72.

Table 5

Characteristics of Selected Soviet Motor Vehicles a/
(Continued)

Designation and Model	Capacity	Plant	Years of Production
Passenger automobiles (Continued)			
Jeep			
GAZ-67B GAZ-69, GAZ-69A <u>b/</u>	4 passengers 8 passengers	GAZ GAZ (1952-56); Ul'yanovskiy Avtozavod from 1956	1943-53 1952-
Trucks			
Cargo			
UAZ-450 GAZ-51 GAZ-51A GAZ-63 Ural-ZIS-5 Ural-ZIS-352 (on ZIS-5M base) Ural-ZIS-355 Ural-ZIS-355M	0.75 ton 2.5 tons 2.5 tons 2 tons 3 tons 2.5 tons 3 tons 3.5 tons	Ul'yanovskiy Avtozavod GAZ GAZ GAZ Ural-ZIS (Ural-Zavod imeni Stalina) Ural-ZIS Ural-ZIS Ural-ZIS	1958- 1946-55 1955- 1946- 1944-55 1952-56 1956-58 1958-

Table 5
Characteristics of Selected Soviet Motor Vehicles a/
(Continued)

Designation and Model	Capacity	Plant	Years of Production
Trucks			
Cargo (Continued)			
ZIL-150	4 tons	ZIL	1946-57
ZIL-151	4.5 tons	ZIL	1947-57
ZIL-156	3.5 tons	ZIL	1949-57
ZIL-156A	3.5 tons	ZIL	1953-57
ZIL-164	4 tons	ZIL	1957-
ZIL-157	4.5 tons	ZIL	1958-
MAZ-200	7 tons	Minskiy Avtozavod	1947-
MAZ-200G	7 tons	Minskiy Avtozavod	1951-57
MAZ-502	4 tons	Minskiy Avtozavod	1957-
YAAZ-210	12 tons	Yaroslavskiy Avtozavod	1951-58
YAAZ-219	12 tons	Yaroslavskiy Avtozavod	1958-59
YAAZ-214 (KRAZ-214)	7 tons	Yaroslavskiy Avtozavod; Kremenchugskiy Avtozavod from 1959	1956-
Dump			
YAAZ-222 (KRAZ-222)	10 tons	Yaroslavskiy Avtozavod; Kremenchugskiy Avtozavod from 1959	1958-
YAAZ-210E	10 tons	Yaroslavskiy Avtozavod	1951-58

Table 5

Characteristics of Selected Soviet Motor Vehicles a/
(Continued)

Designation and Model	Capacity	Plant	Years of Production
Trucks			
Dump (Continued)			
KAZ-585V	3.5 tons	Kutaiisskiy Avtozavod	1952-58
KAZ-600V	3.5 tons	Kutaiisskiy Avtozavod	1956-
GAZ-93 (on GAZ-51 base)	2.25 tons	1948-50; Odesskiy Avtozavod, 1950-58;	1948-
ZIL-585 (on ZIL-164 base)	3.5 tons	Goranskiy Avtozavod after 1958	
ZIL-585V	3.5 tons	ZIL	1949-55
ZIL-MMZ-585I	3.5 tons	Mytishchinskiy Mashinostroitel'nyy Zavod	1955-57
MAZ-205	6 tons	Minskii Avtozavod	1957-
MAZ-525 (BAZ-525)	25 tons	Minskii Avtozavod; Belarus from 1959	1947-
MAZ-530 (BAZ-530)	40 tons	Minskii Avtozavod; Belarus from 1960	1951-1957-
Special-purpose			
YAAZ-210G (truck tractor)	12 tons	Yaroslavskiy Avtozavod	1951-58
MAZ-501 (timber truck)	15 tons	Minskii Avtozavod	1955-
KAZ-601 (cement truck)	30.5 tons	Kutaiisskiy Avtozavod	1956-
KAZ-601-V (cement truck)	3.5 tons	Kutaiisskiy Avtozavod	1957-

Table 5
Characteristics of Selected Soviet Motor Vehicles a/
(Continued)

Designation and Model	Capacity	Plant	Years of Production
Buses			
GAZ-651	20-25 passengers	Gor'kovskiy Avtobus Zavod	1949-50
PAZ-651	20-25 passengers	Pavlovskiy Avtobus Zavod	1950-58
KAVZ-651	20-25 passengers	Kurganskiy Avtobus Zavod	1958-
PAZ-652	23-42 passengers	Pavlovskiy Avtobus Zavod	1958-
ZIL-155	28-52 passengers	ZIL	1949-57
ZIL-158 (LIAZ-158)	32-60 passengers	ZIL	1957-59
ZIL-127	32 passengers	ZIL	1956-60
LAZ-695	32 passengers	L'vovskiy Avtobus Zavod	1957-58
LAZ-695B	31 passengers	L'vovskiy Avtobus Zavod	1958-
RAF-251	21-28 passengers	Rizhskiy Zavod	1955-
RAF-08 and RAF-10	8-9 passengers	Rizhskiy Zavod	1957-

a. RSFSR, Ministerstvo Avtomobil'nogo Transporta i Shlosseynikh Dorog, Kratkiy avtomobil'nyy spravochnik (Brief Automobile Handbook), Moscow, 1961.

b. The capacity of the GAZ-69A is five passengers.

Table 6

Characteristics of Selected Soviet Tractors
That Were Entered into Production After 1955

Designation and Model	Type	Horsepower		Year Started	Production	Plant
		Engine	Drawbar			
Tracklaying						
DT-40	Timber hauling	40	26	6,500 kg or 14,330 lb	1956	Minsk and Onega
DT-54A	General-purpose	54	37	5,540 kg or 12,213 lb	1957	Khar'kov, Stalingrad, Altay
DT-55	Modification of DT-54	55	37	5,800 kg or 12,787 lb	1956	Stalingrad
DT-60	Timber hauling	60	40	10,500 kg or 23,148 lb	1957	Altay, Minsk
KDP-38	Modification of KDP-35	40	24	3,950 kg or 8,708 lb	1958	Lipetsk
S-100	Modernization of S-80	100	60	11,500 kg or 25,353 lb	1958	Che lyabinsk
T-140	General-purpose	140	115	14,700 kg or 32,408 lb	1959	Bryansk
Wheeled						
DT-14	On KMTZ-7 chassis		14	6.5	1,460 kg or 3,219 lb	1956
DT-20	Modification of DT-14		20	9.0	1,460 kg or 3,219 lb	1958
DT-24 (DT-24-2, DT-24-ZT, DT-24-2M, DT-24-ZM)	Row crop		24	12.5	2,495 kg or 5,500 lb	1955
DT-28	Modification of DT-24		28	14	2,200 kg or 4,850 lb	1958
DSSh-14	Self-propelled chassis		14	7.0	1,560 kg or 3,439 lb	Vladimir
DVSSh-16	Modification of DSSh-14M		16	7.5	1,370 kg or 3,020 lb	Khar'kov
MTZ-5L	Modification of MTZ-5 (Belarus)		45	23	2,750 kg or 6,063 lb	1958
MTZ-5	Modification of MTZ-2 (Belarus)		45	N.A.	2,880 kg or 6,349 lb	Minsk

a. Dolmatovskiy, Yu.A., and Trepeneikov, I.I., Traktory i automobilei: kratkiy spravochnik (Tractors and Automobiles: A Brief Handbook), Moscow, 1960.

APPENDIX D

OUTPUT OF PROCESSED FOODS IN THE USSR
1950-61

- 75 -

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Table 7

USSR: Output of Processed Foods a/*
1950-61

Item	Unit	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Bread and bakery products	Thousand mt	12,412	12,604	13,474	13,486	14,820	15,784	15,155	14,192	15,000	15,000	15,000	15,000
From quality flour		4,406	5,160	5,914	6,668	7,422	8,176	8,790	9,124	9,880	9,900	10,050	
From coarse-milled flour		8,006	7,444	7,560	6,818	7,398	6,365	5,797	5,576	5,320	5,100	4,950	
Meat and meat products	Thousand mt	1,556	1,715	1,965	2,212	2,459	2,524	2,671	3,115	3,372	4,228	4,406	4,251
Less canned meat		58	64	70	72	84	93	103	109	113	134	134	122
Net meat		1,498	1,651	1,895	2,140	2,375	2,431	2,568	3,006	3,259	4,094	4,272	4,129
Fish and fish products	Thousand mt	1,755	2,142	2,107	2,195	2,505	2,737	2,849	2,761	2,936	3,075	3,541	3,724
Less spoilage and waste		1,227	1,497	1,473	1,534	1,751	1,913	1,992	1,930	2,052	2,149	2,475	2,603
Less canned fish		80	100	128	163	204	242	276	255	253	272	290	305
Net fish		1,147	1,397	1,345	1,371	1,547	1,671	1,716	1,675	1,799	1,877	2,185	2,298
Butter	Thousand mt	336	355	371	382	389	463	557	635	659	721	737	781
Sugar	Thousand mt	2,516	2,970	3,057	3,422	2,598	3,406	4,338	4,476	5,415	5,993	6,314	8,391
Granulated		2,523	2,979	3,067	3,134	2,611	3,419	4,354	4,491	5,433	6,011	6,363	8,411
Granulated, net b/		1,815	2,111	2,010	2,170	1,323	2,121	2,747	2,938	3,619	4,172	4,429	6,385
Lump		701	859	1,017	1,252	1,275	1,285	1,591	1,538	1,766	1,821	1,915	2,006
Canned goods	Million 400-gram cans	1,535	1,848	2,064	2,358	2,711	3,217	3,601	3,794	4,073	4,363	4,861	5,550
	Thousand mt	192	788	836	957	1,055	1,223	1,263	1,416	1,228	1,644	1,327	1,531
	Thousand mt	14	219	272	338	392	399	437	449	395	442	431	474
Vegetable oil, net c/		1.3	1.6	1.6	2.0	2.7	3.2	4.1	4.2	4.7	5.4	6.0	6.4
Margarine and compound fats		62.8	73.7	84.6	95.4	106.2	116.2	122.9	130.1	140.2	145.4	138.0	145.7
Wine		130.8	150.5	161.5	183.0	188.2	184.7	180.7	196.5	199.1	211.9	249.8	266.7
Champagne		125.1	141.2	158.1	183.2	207.4	198.2	203.3	215.2	211.9	213.4	244.8	247.8
Vodka and vodka products		816	767	878	1,067	1,077	1,206	1,341	1,355	1,454	1,474	1,513	1,513
Beer		49.1	57.0	67.0	78.4	89.0	107.5	123.0	132.0	150.0	156.5	172.0	184.6
Cigarettes													
Soap													
Cheese													

* Footnotes for Table 7 follow on p. 78.

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Table 7

USSR: Output of Processed Foods a/
1950-61
(Continued)

Item	Unit	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Macaroni	Thousand mt	440	496	617	740	850	958	862	957	950	962	1,007	999
Flour	Million mt	22.0	24.0	26.0	27.0	30.0	32.0	32.0	33.0	33.0	36.0	36.0	36.0
Less flour used in industrial bread baking (0.74 mt per mt of bread)		9.2	9.3	10.0	10.0	11.0	11.7	11.2	10.7	11.1	11.2	11.1	11.1
Less flour in confections (0.74 mt per mt of pastry and cookies)		0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Less flour used in macaroni (1.023 mt per mt of macaroni)		0.4	0.5	0.6	0.8	0.9	1.0	0.9	1.0	1.0	1.0	1.0	1.0
Net flour		12.1	13.8	15.0	15.7	17.5	18.7	19.3	20.7	22.3	23.2	21.8	23.3
Confectionery goods	Thousand mt	993	1,158	1,286	1,410	1,457	1,389	1,582	1,575	1,670	1,787	1,744	1,806
Whole milk and whole milk products	Thousand mt	1,139	1,636	1,723	1,893	2,147	2,619	4,064	5,199	6,049	7,202	8,304	9,059

a. The sugar and margarine series embrace total production. The milk products series is equivalent to state procurements of milk. The butter, vegetable oil, and grape wine series exclude domestic production. The meat and cheese series exclude domestic and collective farm production. The bread and bakery products series exclude domestic, collective farm, and industrial cooperative production. The scope of the remaining series is not defined.

b. Less sugar used to produce lump sugar.

c. Less vegetable oil used for margarine.

Table 8

Documentation for Output of Processed Foods (in Table 7)

Item	Sources of Production Data
1. Bread and bakery products	<p><u>1950-57</u>, Zotov, V.P. <u>Pishchevaya promyshlennost' Sovetskogo Soyuza</u> (The Food Industry of the Soviet Union), Moscow, 1958, p. 171. (hereafter referred to as <u>Food Industry of the Soviet Union, 1958</u>)</p> <p><u>1958</u>, Interpolated between 1957 and 1959.</p> <p><u>1959</u>, <u>Khlebopekarnaya i konditerskaya promyshlennost'</u>, no 4, 1960, p. 1.</p> <p>Production of good quality and coarse-milled flour for <u>1950</u>, <u>1955-57</u>, derived by using ratios given in <u>Food Industry of the Soviet Union, 1958</u>, p. 93.</p> <p><u>1951-54</u>, Interpolated between 1950 and 1955.</p> <p><u>1958-59</u>, Estimated by extrapolating from 1957 on basis of estimated total output.</p> <p><u>1960-61</u>, Projection of 1954-59 trend.</p>
2. Meat and meat products (net of canned meats)	<p>Derived as the difference between total production of meat and canned meat, and meat-vegetables. Canned meat and meat-vegetables converted from 400 gram cans to metric tons and adjustment factor of one-half is used or a conversion ratio of 5,000 cans per metric ton. Total production of meat for <u>1950-61</u>, USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1961 godu</u> (The National Economy of the USSR in 1961), Moscow, 1962, p. 266. (hereafter referred to as <u>National Economy, 1961</u>)</p> <p>Total production of canned meat and meat-vegetables for <u>1950</u>, <u>1953</u>, <u>1955-57</u>, USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1958 godu</u> (The National Economy of the USSR in 1958), Moscow, 1959, p. 315. (hereafter referred to as <u>National Economy, 1958</u>)</p> <p><u>1951-52</u>, <u>1954</u>, Interpolated between 1950 and 1955.</p> <p><u>1958-61</u>, <u>National Economy, 1961</u>, p. 271.</p>

Table 8

Documentation for Output of Processed Foods (in Table 7)
(Continued)

Item	Sources of Production Data
3. Fish and fish products (adjusted for spoilage and waste and net of canned fish)	Derived as a residual, the difference between total production of fish catch, spoilage and waste, and canned fish. Total production of fish catch, marine animals and whales for <u>1950-61</u> , <u>Na-</u> <u>tional Economy, 1961</u> , p. 268. Spoil- age and waste was adjusted by using a ratio of 69.9 per cent of gross pro- duction of fish catch. Canned fish was converted from 400 gram cans to metric tons. Total production of canned fish for <u>1950, 1953, 1955-57, National Economy,</u> <u>1958</u> , p. 315. <u>1951-52, 1954</u> , Interpolated between 1950 and 1955. <u>1958-61, National Economy, 1961</u> , p. 271.
4. Butter	<u>1950-61, National Economy, 1961</u> , p. 269.
5. Sugar (adjusted for granulated used in lump sugar production)	Derived as the sum of granulated sugar less sugar used to produce lump sugar, plus lump sugar. Production of granulated and lump sugar for <u>1950-61</u> , <u>National Economy, 1961</u> , p. 264. Sugar used to produce lump sugar was estimated on the basis of the norm for converting granulated sugar to lump sugar by using 1.01 kg of granu- lated sugar to produce 1.00 kg of lump sugar. See Opatskiy, L. V. <u>Razmeshcheniye</u> <u>nishchevoy promyshlennosti SSSR</u> (Location of the Food Industry in the USSR), Moscow, 1958, p. 96.
6. Canned goods	<u>1950-61, National Economy, 1961</u> , p. 271.
7. Vegetable oil (net of vegetable oil used in margarine)	<u>1950-61, National Economy, 1961</u> , p. 270. Sixty per cent of margarine was assumed to be edible vegetable oil, this figure was subtracted from total vegetable oil output.

Table 8

Documentation for Output of Processed Foods (in Table 7)
(Continued)

Item	Sources of Production Data
8. Margarine and compound fats	<u>1950-57</u> , <u>Food Industry of the Soviet Union</u> , 1958, p. 170. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 263.
9. Wine (excluding kolkhoz and household production)	<u>1950-57</u> , <u>Food Industry of the Soviet Union</u> , 1958, p. 162. <u>1958</u> , Report on Fulfillment of the State Plan, <u>Current Digest of Soviet Press</u> , vol XI, no 3, 25 Feb 59, p. 12. <u>1959</u> , <u>Ibid.</u> , vol XII, no 3, 17 Feb 60, p. 4. <u>1960-61</u> , Based on relationship of total wine including kolkhoz production. In the past this series was 75 to 80 per cent of total.
10. Champagne	<u>1950-57</u> , <u>Food Industry of the Soviet Union</u> , 1958 p. 174. <u>1958-59</u> , <u>Pravda</u> , 22 Jan 60. Production in terms of bottles was converted to decaliters, using 1 bottle equals 1 litre. <u>1960-61</u> , Assumed that growth is similar to wine production.
11. Vodka and vodka products	<u>1950</u> , <u>1953</u> , <u>1955</u> , <u>National Economy</u> , 1958, p. 302-303. <u>1951-52</u> , <u>1954</u> . Interpolated between 1950 and 1955. <u>1956-57</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye, <u>Narodnoye khozyaystvo SSSR v 1959 godu</u> (The National Economy of the USSR in 1959), Moscow, 1960, p. 267. (hereafter referred to as <u>National Economy</u> , 1959) <u>1958-61</u> , <u>National Economy</u> , 1961, p. 263.
12. Beer	<u>1950-61</u> , <u>Ibid.</u>
13. Cigarettes	<u>1950-56</u> , <u>Food Industry of the Soviet Union</u> , 1958, p. 177. <u>1957</u> , <u>National Economy</u> , 1959, p. 267. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 263.

Table 8

Documentation for Output of Processed Foods (in Table 7)
(Continued)

Item	Sources of Production Data
14. Soap (40 percent fat content)	<u>1950-55</u> , <u>Food Industry of the Soviet Union</u> , 1958, p. 178. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 267. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 263.
15. Cheese	<u>1950</u> , <u>1953</u> , <u>1955-57</u> , <u>Food Industry of the Soviet Union</u> , 1958, p. 161. <u>1951-52</u> , <u>1954</u> , Interpolated between 1950 and 1955. <u>1958</u> , Zотов, В. П. <u>Leeskaya i pishchevaya promyshlennost' SSSR</u> , 1959-65 (Light and Food Industry of the USSR, 1959-65), Moscow, 1959, p. 100. <u>1959</u> , <u>Molochnaya promyshlennost'</u> , no 5, May 1961, p. 23-25. <u>1960-61</u> , <u>Molochnaya promyshlennost'</u> , no 6, June 1962, p. 27.
16. Macaroni	<u>1950-55</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Promyshlennost' SSSR</u> (Industry of the USSR), Moscow, 1957, p. 403. (hereafter referred to as <u>Industry</u>). <u>1956-57</u> , <u>National Economy</u> , 1959, p. 267. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 263.
17. Flour (adjusted to exclude flour in bread products, confections, and macaroni)	Derived as a residual, the difference between total production of flour, less flour used in bread baking, confections (pastry and cookies), and macaroni. Total production of flour for <u>1950</u> , <u>1953</u> , <u>1955</u> , <u>National Economy</u> , 1958, p. 302-303. <u>1951-52</u> , <u>1954</u> , Interpolated between 1950 and 1955. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 267. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 263. Flour used in industrial bread baking was derived by multiplying by the ratio of 0.74 mt per mt of bread (see Opatskiy, 5, above, p. 93). Flour used in confections was derived by multiplying by the ratio of 0.74 mt per mt by the sum of cake and biscuits, baked goods, pastry cake, and one-half of other confectionery

Table 8

Documentation for Output of Processed Foods (in Table 7)
 (Continued)

Item	Sources of Production Data
	products. Production of confections for <u>1950, 1955, Industry</u> , p. 402. <u>1951-54</u> , Interpolated between 1950 and 1955. <u>1956-57, National Economy, 1959</u> , p. 271. <u>1958-60, National Economy, 1960</u> , p. 347. <u>1961</u> , 1960 proportion of baked goods to total confections. Flour used in macaroni was derived by multiplying by the ratio of 1.023 mt per mt of macaroni (see Opatskiy, 5, above, p.93).
18. Confectionery goods	<u>1950-61, National Economy, 1961</u> , p. 265.
19. Whole milk and whole milk products	<u>1950-61, National Economy, 1961</u> , p. 269.

Table 9
USSR: Retail Sales of Processed Foods a
1950-61

Item	Million 1955 Rubles											
	1950	1951	1952	1953	1954	1955 b/	1956	1957	1958	1959	1960	1961
Bread and bakery products	30,281	30,747	32,869	32,900	36,154	38,507	36,970	35,353	36,593	37,082	36,593	36,593
Meat and meat products	7,255	7,996	9,178	10,365	11,504	11,775	12,439	14,559	15,785	19,830	20,692	19,999
Fish and fish products	3,384	4,122	3,968	4,045	4,565	4,931	5,063	4,942	5,308	5,538	6,447	6,781
Butter	6,199	6,549	6,845	7,048	7,177	8,543	10,277	11,716	12,159	13,303	13,598	14,410
Sugar	14,569	17,198	17,701	19,815	15,044	19,723	25,119	25,919	31,355	34,702	36,736	48,589
Canned goods	2,815	3,389	3,786	4,325	5,027	5,901	6,605	6,959	7,471	8,002	8,916	10,180
Vegetable oil, net	3,839	4,296	4,558	5,218	5,698	5,066	6,887	7,721	6,696	8,801	7,236	8,348
Margarine and compound fats	2,388	2,724	3,383	4,205	4,876	4,964	5,436	5,585	4,913	5,362	5,362	5,896
Wine, champagne, vodka and vodka products, and beer c/	36,024	42,323	48,722	55,521	61,753	66,725	71,048	79,295	83,019	83,119	86,041	91,106
Cigarettes	7,157	8,077	9,045	10,480	11,865	11,339	11,630	12,311	13,266	13,924	14,004	14,176
Soap	1,881	1,768	1,809	2,024	2,459	2,483	2,918	3,091	3,352	3,398	3,488	3,488
Cheese	735	854	1,004	1,174	1,333	1,611	1,843	1,978	2,247	2,345	2,577	2,666
Macaroni	1,641	1,849	2,301	2,759	3,169	3,573	3,214	3,569	3,542	3,587	3,755	3,725
Flour	6,537	7,456	8,104	8,483	9,455	10,104	10,428	11,184	12,049	12,535	11,779	12,589
Confectionery goods	13,866	16,171	17,957	19,689	20,347	19,397	22,091	21,994	23,404	24,954	24,354	25,219
Whole milk and whole milk products	2,525	3,628	3,821	4,198	4,761	5,808	9,012	11,529	13,414	15,971	18,415	20,089
Total	141,096	159,147	175,051	192,249	205,187	220,450	240,980	257,705	274,367	292,668	299,903	323,254
							1955 = 100					
Index	64,0	72,2	79,4	87,2	93,1	100,0	109,3	116,9	121,5	132,8	136,0	147,0

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a. 1955 retail sales adjusted for distribution charges moved by physical volume indexes.
b. 1955 retail sales from USSR, Tsentral'noye Statisticheskoye Upravlenye, Narodnoye khozyaystvo SSSR v 1958 godu (The National Economy of the USSR

in 1958), p. 722-723. Retail sales have been adjusted for distribution charges. See Table 16, p. 125, below.

APPENDIX E

OUTPUT OF SOFT GOODS IN THE USSR
1950-61

Table 10
USSR: Output of Soft Goods
1950-61

Item	Unit	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Cotton fabric	Million sq m	2,745	3,337	3,551	3,752	3,985	4,227	3,972	4,095	4,308	4,615	4,838	4,874
Silk fabric	Million sq m	106	141	180	312	404	415	602	653	690	663	675	682
Wool fabric	Million sq m	193	222	240	262	305	316	339	358	385	415	439	454
Linen fabric	Million sq m	257	281	227	256	255	272	353	388	440	485	516	493
Sevn garments	Million 1955 rubles	4,585	5,227	5,869	6,556	7,794	8,620	9,491	9,583	10,500	11,554	12,517	13,296
Knit outerwear	Million pieces	47.1	58.9	63.5	66.0	75.5	85.2	85.4	90.2	97.2	103.9	111.6	117.8
Knit underwear	Million pieces	150.4	198.3	234.9	274.7	327.1	346.5	348.5	374.7	399.3	438.6	472.3	487.7
Hosiery	Million pairs	472.7	597.8	584.9	611.9	674.8	772.2	803.2	844.7	887.7	926.1	964.1	1,000.5
Leather footwear	Million pairs	203.0	239.2	237.0	238.1	255.2	271.2	287.0	317.3	356.4	389.9	419.3	443.2

Table 11

Documentation for Output of Soft Goods (in Table 10)

Item	Sources of Production Data
1. Cotton fabric	<u>1950-61</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1961 godu</u> (The National Economy of the USSR in 1961), Moscow, 1962, p. 250. (hereafter referred to as <u>National Economy, 1961</u>)
2. Silk fabric	<u>1950-61</u> , <u>Ibid.</u>
3. Wool fabric	<u>Ibid.</u>
4. Linen fabric	<u>Ibid.</u>
5. Sewn garments	Net value for all years estimated on the basis of gross and net values for 1958 in <u>Shveynaya promyshlennost'</u> , no 1, 1959, p. 4. Net production series derived by moving 1958 value addid of production by the official gross production index for this branch of industry. Official sewn garment indexes for: <u>1950-55</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Promyshlennost' SSSR (Industry of the USSR)</u> , Moscow, 1957, p. 38. (hereafter referred to as <u>Industry</u>) <u>1956-57</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1959 godu</u> (The National Economy of the USSR in 1959), Moscow, 1960, p. 146. (hereafter referred to as <u>National Economy, 1959</u>) <u>1958</u> , <u>Shveynaya promyshlennost'</u> , no 1, 1959, p. 4. <u>1959-61</u> , <u>National Economy</u> , 1961, p. 174.
6. Knit outerwear	<u>1950-54</u> , <u>Industry</u> , p. 343. <u>1955</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1960 godu</u> (The National Economy of the USSR in 1960), Moscow, 1961, p. 320. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 245. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 248.

Table 11

Documentation for Output of Soft Goods (in Table 10)
(Continued)

Item	Sources of Production Data
7. Knit underwear	<u>1950-55</u> , <u>Industry</u> , p. 343. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 245. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 248.
8. Hosiery	<u>1950-55</u> , <u>Industry</u> , p. 343. <u>1956-57</u> , <u>National Economy</u> , <u>1959</u> , p. 245. <u>1958-61</u> , <u>National Economy</u> , <u>1961</u> , p. 248.
9. Leather footwear	<u>1950-61</u> , <u>National Economy</u> , <u>1961</u> , p. 260.

APPENDIX F

1955 PRICES OF INDUSTRIAL MATERIALS IN THE USSR

- 91 -

[p. 90 blank]

Table 12

USSR: 1955 Prices of Industrial Materials

Item	1 July 1955 Rubles per Unit	Description
Electric power Coal	0.165 per kWh	Represents average weighted rates for industrial and residential consumers
Anthracite Bituminous Lignite	90.48 per mt 83.09 per mt 42.84 per mt	Run of mine prices; weighted average prices of various sizes of coal sold at varying prices. Prices reflect regional and major coal basin differences.
Petroleum products and natural gas		Exclusive of turnover taxes
Refined products Crude oil, consumed, added to storage, net exports Associated natural gas Natural gas (from gas wells)	84.45 per mt 48.65 per mt 19.75 per mt 21.33 per mt	Estimated on the basis of transfer prices at the refinery Estimated on the basis of transfer prices at the field Estimated on the basis of transfer prices at the field Estimated on the basis of transfer prices at the field
Nonferrous metals		
Copper Lead Zinc Aluminum Tin Magnesium	6,600 per mt 7,150 per mt 3,150 per mt 4,760 per mt 103,000 per mt 7,200 per mt	COST 546-41, MARK MO, Cu 99.95, electrolytic copper COST 3778-47, MARK S-2, Pb 99.95, ingots COST 3640-47, MARK TS-2, Zn 99.9 COST 3549-47, MARK A-2, AL 99.00, ingots COST 860-41, MARK O-1, Sn 99.9 COST 804-49, MARK MG-1, Mg 99.21
Forest products		
Lumber Industrial logs (excluding sawlogs in lumber) Fuelwood	186 per cu m 89 per cu m 42 per cu m	Average weighted regional price for sorts II and III of conifer lumber, adjusted for transportation charges Excluding kolkhoz production, f.o.b. point of origin

Table 12
USSR: 1955 Prices of Industrial Materials
(Continued)

Item	1 July 1955 Rubles per Unit	Description	
		Paper and paperboard	Estimated average prices
Paper			
Newsprint	1,250	per mt	
Wrapping and packing	1,900	per mt	
Printing	2,100	per mt	
Writing paper	3,640	per mt	
Sacking	1,900	per mt	
Offset printing	2,100	per mt	
Cover paper	2,100	per mt	
Winding	2,400	per mt	
Deep printing	2,500	per mt	
Lithographic	3,500	per mt	
Cartographic	3,700	per mt	
Cable insulation	9,800	per mt	
Capacitor	1,500	per mt	
Waxing paper	1,900	per mt	
Other	2,100	per mt	
Paperboard	2,500	per mt	
Chemicals			
Nitrogen fertilizer	254	per mt	Ammonium nitrate, grade V, 34.7 percent N, adjusted to 20.5 percent N
Phosphorous fertilizer	160	per mt	Superphosphates, grades 1 and 2 adjusted to 18.7 percent P ₂ O ₅ and averaged
Potassium fertilizer	69	per mt	Third grade material, 56.9 percent K ₂ O, adjusted to 41.6 K ₂ O basis
Phosphorite fertilizer	52	per mt	Estimated on basis of superphosphate
Sulfuric acid	167	per mt	Average price of tower and chamber grade acid adjusted to 100 percent basis
Soda ash (calcined soda)	275	per mt	Average price of four grades adjusted to 95 percent basis
Caustic soda	1,048	per mt	The price to large industrial consumers may be significantly lower
Ethyl alcohol	25	per gal	

Table 12
(Continued)

Item	1 July 1955 Rubles per Unit	Description
Chemicals (Continued)		
Wood chemicals		
Oleoresin, bals, and rosin	4,000 per mt	Average of three prices on pine rosin
Turpentine oil	5,100 per mt	
Acetate solvents	7,400 per mt	Average of three prices
Raw and refined turpentine	4,900 per mt	Price for refined turpentine
Acetic acid	3,350 per mt	Price for technical grade, 70 percent
Synthetic dyes	21,000 per mt	Based on US average sale price for 1955 and estimated ruble/dollar ratio of 8 to 1
Synthetic fibers	16,000 per mt	Based on estimated US average price for 1955 of \$2,000 per ton and ruble/dollar ratio of 8 to 1
Synthetic rubber	11,400 per mt	
Plastics	5,200 per mt	Average for three types
Paints and varnishes		
Dry zinc whites	2,800 per mt	Average for two types
Enamels and primers	5,700 per mt	Average price of about 100 enamels and primers
Litharge and red lead	7,300 per mt	Average of nine prices
Nitrocellulose varnishes		
and solvents	6,000 per mt	Average of nine prices
Oil varnishes and siccatives	5,700 per mt	Average of 45 prices
Natural drying oil	9,100 per mt	
Oksol drying oil	5,000 per mt	Average of three prices
Construction materials		
Cement	86 per mt	Price varies to reflect qualitative increases. Undelivered price.
Construction lime	88 per mt	Average zonal prices for medium grade were weighted by 1955 regional production
Gypsum	3.64 per sq m	Average zonal prices for medium grade were weighted by 1955 regional production
Dry gypsum plaster board		

Table 12
USSR: 1955 Prices of Industrial Materials
(Continued)

Item	1 July 1955 Rubles per Unit	Description
Construction materials (Continued)		
Ceramic tiles for facings and floors	20.9 per sq m	Zonal prices for rectangular floor tiles 1 cm thick were weighted by 1955 regional production and facing tile price was determined. The 1955 ratio between the two types was used to weight the average price.
Soft roofing	1.028 per sq m	Zonal prices for three different types were weighted by 1955 regional production.
Roofing tile	0.538 per piece	Weighted regional price
Asbestos cement shingle	0.386 standard unit	Zonal prices for the standard unit were weighted by 1955 regional production.
Asbestos cement pipe	12.200 per km	Average zonal prices for three types of 200-mm diameter pipe were weighted by 1955 regional production.
Refractory materials		
Fire clay	146 per mt	Average of different types
Dinas brick	124 per mt	Average of different types
Magnesite and chrome magnesite brick	379 per mt	Average of different types
Magnesite powder (metallurgical)	123 per mt	Average of different types
Window glass	6.6 per sq m	Representative window and polished glass types were chosen.
Polished glass	66.4 per sq m	
Precast concrete	427 per cu m	
Prestressed	572 per cu m	
Mineral wool insulation	65 per cu m	Prices for six types from Zone II
Ceramic sewer pipe	740 per mt	Average price of all diameter pipes in Zone III
Masonry wall materials		
Construction brick	0.231 per standard brick	Zonal prices for MARK 100 grade, which is the second of four grades, were weighted by 1955 regional production.
Dimension and field stone	0.232 per standard brick	
Large concrete and silicate wall blocks	0.490 per standard brick	
Small wall blocks	0.330 per standard brick	
Rock products	17.2 per cu m	Weighted price for sand, gravel, crushed stone, and rubble

Table 13

Documentation for 1955 Prices of Industrial Materials (in Table 12)

Item	Sources of Price Data
I. Electric power	Weighted average derived from rates in CIA/ RR ER 60-16, <u>1955 Ruble-Dollar</u> <u>Price Ratios for Intermediate Products</u> <u>and Services in the USSR and US</u> , Jun 60, p. 52.
II. Coal	
1. Anthracite	
2. Bituminous	
3. Lignite	Nedolyzhenko, I.A. <u>Voprosy planirovaniya</u> <u>tsen v ugol'noy promyshlennosti SSSR</u> (Questions of Planning Prices in the Coal Industry of the USSR), Moscow, 1955, p. 52-62.
III. Petroleum products and natural gas	
1. Refined products	Price derived from the following: (1) average cost of producing a ton of crude oil in 1955, Gonti et al. <u>Neft'</u> <u>i prirodnyy gaz Ukrayny</u> (Oil and Natural Gas of the Ukraine), Moscow, 1957, p. 64, 104-107 (hereafter referred to as <u>Oil and Natural Gas</u>); (2) propor- tion of transfer price at the field rep- resented by cost of production, Broyde, I.M. <u>Finansirovaniye i kreditovaniye</u> <u>predpriyatiy neftyanoy i gazovo promysh-</u> <u>lennosti</u> (Financing and Crediting of Enterprises of the Oil and Gas Industry), Moscow, 1958, p. 130-131 (hereafter re- ferred to as <u>Enterprises of Oil and Gas</u> <u>Industry</u>); (3) estimated transportation charges, rubles per ton of crude oil delivered to refineries; (4) proportion of total cost of producing refined prod- ucts represented by cost of crude oil, USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Promyshlennost' SSSR</u> (Industry of the USSR), Moscow, 1957, p. 139 (hereafter referred to as <u>Industry</u>); (5) estimated charge of crude oil to refineries; (6) proportion of the transfer price for refined

Table 13

Documentation for 1955 Prices of Industrial Materials (in Table 12)
(Continued)

Item	Sources of Price Data
	products represented by cost of production, Broyde. <u>Enterprises of Oil and Gas Industry</u> , p. 130-131.
2. Crude oil, consumed, added to storage, net exports	Derived from (1) average cost of producing a ton of crude oil in 1955, Gonti. <u>Oil and Natural Gas</u> (see III, 1, above); (2) proportion of transfer price at the field represented by cost of production, Broyde. <u>Enterprises of Oil and Gas Industry</u> (see III, 1, above).
3. Associated natural gas	Derived from (1) estimated average cost of producing 1000 cubic meters of natural gas, Budnitskiy, I.M. <u>Ugol'naya promyshlennost'</u> (The Coal Industry), Moscow, 1958, p. 151 (hereafter referred to as <u>Coal Industry</u>), <u>Industry</u> , p. 133, and <u>Gazovaya promyshlennost'</u> , Jan 56, p. 1; (2) the proportion of transfer price represented by the cost of production, Broyde. <u>Enterprises of Oil and Gas Industry</u> (see III, 1, above).
4. Natural gas (from gas wells)	Derived from estimated average cost of producing 1000 cubic meters of natural gas, Budnitskiy. <u>Coal Industry</u> (see III, 3, above); proportion of transfer price represented by the cost of production, Broyde, <u>Enterprises of Oil and Gas Industry</u> (see III, 1, above).
IV. Nonferrous metals	
1. Copper (cathodes)	USSR, Ministerstvo Ugol'noy Promyshlennosti. <u>Materialy i oborudovaniye primenяваемые в угольной промышленности: справочник дополнение к 1 чисти: 1 том</u> (Handbook of Prices for Materials and Equipment

Table 13

Documentation for 1955 Prices of Industrial Materials (in Table 12)
 (Continued)

Item	Sources of Price Data
	Used in the Coal Industry), Moscow, 1955, supplement to vol 1, pt. 1, p. 101. (hereafter referred to as USSR, Ministerstvo Ugol'noy Promyshlennosti. <u>Spravochnik</u>)
2. Lead (ingots)	<u>Ibid.</u>
3. Zinc (ingots)	<u>Ibid.</u>
4. Aluminum (unalloyed ingots)	<u>Ibid.</u>
5. Tin	<u>Ibid.</u>
6. Magnesium	<u>Ibid.</u>
V. Forest products	
1. Lumber	Weighted regional price of conifer lumber, average of sorts II and III, 4-6.5 meters, 25-35 mm, USSR, Ministerstvo Finansov. <u>Spravochnik tsen na stroytel'nyye materialy i oborudovaniye</u> (Handbook of Prices for Construction Materials and Equipment), Moscow, 1956, pt. 1, p. 100, 111 (hereafter referred to as USSR, Ministerstvo Finansov. <u>Spravochnik</u>). Adjusted 3.8 percent for transportation charges, <u>ibid.</u> , p. 97.
2. Industrial logs (excluding sawlogs in lumber)	Turetskiy, Sh. Ya. <u>Ocherki planovogo tsenoobrazovaniya v SSSR</u> (Essay on Planning of Price Formation in the USSR), Moscow, 1959, p. 206. Round logs Zone I adjusted for transportation charges.
3. Fuelwood	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 131 (see V, 1, above).
VI. Paper and paperboard	<u>Ibid.</u> , p. 858-865.

Table 13

Documentation for 1955 Prices of Industrial Materials (in Table 12)
(Continued)

Item	Sources of Price Data
VII. Chemicals	
1. Nitrogen fertilizer	USSR, Ministerstvo Ugol'noye Promyshlennosti. <u>Spravochnik</u> , p. 131 (see IV, 1, above).
2. Phosphorous fertilizer	<u>Ibid.</u> , p. 173.
3. Potassium fertilizer	<u>Ibid.</u> , p. 169.
4. Phosphorite fertilizer	<u>Khimicheskaya promyshlennost'</u> , no 6, 1955, p. 30.
5. Sulfuric acid	USSR, Ministerstvo Ugol'noy Promyshlennosti. <u>Spravochnik</u> , p. 166 (see IV, 1, above).
6. Soda ash	<u>Ibid.</u> , p. 167.
7. Caustic soda	<u>Ibid.</u>
8. Ethyl alcohol	<u>Ibid.</u> , p. 176.
9. Wood chemicals	
a. Oleoresin, baros, and rosin	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 683 (see V. 1, above).
b. Turpentine oil	<u>Ibid.</u> , p. 684.
c. Acetate solvents	<u>Ibid.</u>
d. Raw and refined turpentine	
e. Acetic acid	<u>Ibid.</u> , p. 683.
10. Synthetic dyes	Assumed ruble-dollar ratio of 8 to 1. See <u>Chemical and Engineering News</u> , 19 Nov 56.
11. Synthetic fibers	Assumed ruble-dollar ratio of 8 to 1. See <u>Chemical and Engineering News</u> , 29 Jul 57.
12. Synthetic rubber	Average of 9000-13,800 range cited in Nekrasov, N. N. <u>Ekonomika khimicheskoy promyshlennosti</u> (Economics of the Chemicals Industry), Moscow, 1959, p. 394.
13. Plastics	USSR, Ministerstvo Ugol'noy Promyshlennosti. <u>Spravochnik</u> , p. 177-178 (see IV, 1, above).
14. Paints and varnishes	
a. Dry zinc whites	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 678 (see V, 1, above).

Table 13

Documentation for 1955 Prices of Industrial Materials (in Table 12)
(Continued)

Item	Sources of Price Data
b. Enamels and primers	<u>Ibid.</u> , p. 671, 673.
c. Litharge and red lead	<u>Ibid.</u> , p. 678-679.
d. Nitrocellulose varnishes and solvents	<u>Ibid.</u> , p. 675, 680.
e. Oil varnishes and siccatives	<u>Ibid.</u> , p. 669-670.
f. Natural drying oil	<u>Ibid.</u> , p. 682.
g. Oksol drying oil	<u>Ibid.</u>
VIII. Construction materials	
1. Cement	<u>Ibid.</u> , p. 42-45. Adjustment for transportation charges by reducing Zone I prices by 16 rubles and other zonal prices by 20 rubles. Because of gradual quality increase over the years the average price per ton of cement has been increasing. The 1955 prices for years 1950-61 were, respectively, 107, 109, 110, 111, 112, 113, 112, 114, 116, 117, 118, and 120 rubles per ton.
2. Construction lime	<u>Ibid.</u> , p. 3, 5-8.
3. Gypsum	<u>Ibid.</u> , p. 3-5.
4. Dry gypsum plaster board	<u>Ibid.</u> , p. 14.
5. Ceramic tiles for facings and floors	<u>Ibid.</u> , p. 63, 73-75, 78, 80-82.
6. Soft roofing	<u>Ibid.</u> , p. 82-85.
7. Roofing tile	<u>Ibid.</u> , Part III, p. 378-388, 463, 469, 478, 489, 501, 507, 514 and 519. Regional prices weighted to reflect a division of 58 percent of the tiles from clay and 42 percent from cement sand.
8. Asbestos cement shingle	<u>Ibid.</u> , p. 47-48, 62-63.
9. Asbestos cement pipe	<u>Ibid.</u> , p. 47, 59-63.
10. Refractory materials	
a. Fire clay	<u>Ibid.</u> , p. 29-30.
b. Dinas brick	<u>Ibid.</u> , p. 29.
c. Magnesite and chrome magnesite brick	<u>Ibid.</u> , p. 26-28.
d. Magnesite powder (metallurgical)	<u>Ibid.</u> , p. 29.
11. Window glass	<u>Ibid.</u> , p. 35-37.

Table 13

Documentation for 1955 Prices of Industrial Materials (in Table 12)
(Continued)

Item	Sources of Price Data
12. Polished glass	Ibid.
13. Precast concrete	Beton i zhelezobeton, no 9, Sep 56, p. 307.
a. Prestressed concrete	Ibid., no 5, May 58, p. 174.
14. Mineral wool insulation	USSR, Ministerstvo Finansov. Spravochnik, p. 852-853 (see V, 1, above). Price for six types from Zone II.
15. Ceramic sewer pipe	Ibid., p. 63, 79.
16. Masonry wall materials	Ibid., p. 3, 9-12.
a. Construction brick	
b. Dimension and field stone	
c. Large concrete (including porous) and silicate wall blocks	Ibid., p. 217-220.
d. Small wall blocks	
17. Rock products	Ibid., p. 213, 216, 220, 240-242. Ibid., p. 213, 217, 240-242. Rozenfel'd, Sh. L. Problemy razmeshcheniya promyshlennosti stroitel'nykh materialov SSSR (Problems of Location of Construction Materials Industry of the USSR), Moscow, 1962, p. 239. Prices weighted to reflect the following proportions: 33 percent to sand, 22 percent to gravel, 28 percent crushed stone, and 17 percent rubble.

APPENDIX G

1955 PRICES OF CIVILIAN MACHINERY IN THE USSR

Table 14
USSR: 1955 Prices of Civilian Machinery

Item	Model	1 July 1955 Rubles per Unit						Description
		1950	1951	1952	1953	1954	1955	
I. Boiler equipment								
1. Steam boilers (high capacity, 40 tons of steam per hr or over)		3,550 per mt						Average price per ton per hour of steam capacity for five models
2. Steam boilers (medium capacity, 10 to 40 tons of steam per hr)		6,200 per mt						Average price per ton per hour of steam capacity for three models
3. Steam boilers (low capacity, 10 tons of steam per hr or less)		7,200 per mt						Average price per ton per hour of steam capacity for four models
II. Electric power equipment								
1. Steam and gas turbines		95 per kw						For 1950-55 the average size computed by dividing total capacity by number of units produced. 1955 prices for average sizes obtained by interpolation of prices for models which bracketed the average sizes. Thus variable prices, reflecting changes in the average size of the model produced each year, were based on constant 1955 prices:
2. Hydraulic turbines		80 per kw						
3. Generators for steam turbines		21 per kw						
4. Generators for hydraulic turbines		32 per kw						
5. Electric motors over 100 kw		50 per kw						
		1955 Price per KW						
		1950	1951	1952	1953	1954	1955	
		Steam and gas turbines	107	142	132	170	150	95
		Hydraulic turbines	180	152	116	102	95	80
		Generators for steam turbines	22	20	19	18	17	21
		Generators for hydraulic turbines	87	65	40	35	30	32
		Electric motors over 100 kw	54	52	50	49	50	48
		Average size determined by US analogy.						Median price of six types
		of the average size.						
		Average size of 25 watts						
		1.10						
III. Metalcutting machine tools								
1. Lathes		1623						
2. Turret lathes		1336M						
		8,100						
		30,500						Prices rounded to hundreds of rubles

Table 14
USSR: 1955 Prices of Civilian Machinery
(Continued)

Item	Model	1 July 1955 Rubles Per Unit	Description
III. Metalcutting machine tools (Continued)			
3. Automatic lathes (one spindle)	1112	30,000	
4. Plano-milling machines	661B	35,100	
5. Gear-making machines	526	40,400	Bevel gear shaper
6. Jig-boring machines	2150	91,300	
7. Planers	T242A	157,000	
8. Shapers	TA35	13,300	
9. Slotters	T430	20,800	
10. Horizontal broaching machines	T540	38,700	
11. Internal grinding machines	3260	39,400	
12. Drill grinders	367	7,200	
13. Vertical drills	2A125	5,300	
14. Radial drills	255	17,600	
15. Special, specialized, and unit type		75,000	Estimate based on fragmentary data for three units
16. Grinders, polishers, and bolt threaders	1982	16,000	Pipe threading machine
Estimates based on various models or averages			
After 1955 a weighted average price of 37,000 rubles, based on model breakdown for that year, was employed for all mainline freight cars. For 1950-54, listed prices were applied to production of various models.			
IV. Railroad machine building			
1. Mainline freight cars, four-axle			
a. Refrigerator cars		85,000	
b. Boxcars		31,000	
c. Flatcars		32,000	
d. Gondolas		45,000	
e. Tank cars		40,000	
f. Cement cars			
2. Rail passenger cars			
a. Mainline passenger cars		250,000	
b. Trolley cars		150,000	
c. Subway cars		220,700	Average of two railroad passenger cars
3. Mainline locomotives	L SO LV		
a. Steam locomotives		465,000 426,000 600,000	Excluding tender

Table 14
(Continued)

Item	Model	1 July 1955 Rubles per Unit	Description
3. Mainline locomotives (Continued)			
b. Diesel locomotives	TE-1 TE-2 TE-3	625,000 2,080,000 1,600,000	Price for two-unit combination
c. Electric locomotives	VL 22m VL 23 N-8 N-60	760,000 900,000 1,900,000 1,000,000	
V. Motor vehicles			
1. Passenger cars	Moskvich 401 sedan	9,000	
2. Trucks	GAZ-51	10,500	
3. Buses	PAZ-651, FAZ-652	24,700	
VI. Tractors			
1. Tracklaying	DT-54 KD-35 KDP-35, KDP-38 KT-12A ASKHITZ-NATI S-80	16,200 16,200 18,250 21,900 14,000 32,200	For 1956-59 a weighted average price of 19,979 rubles based on the 1955 mix was used for tracklaying tractors.
2. Wheeled	U-1, U-2, U-3, U-4 KHTZ-7 Belarus (MTZ-1, MTZ-2, MTZ-5) DTR-24	8,000 9,400 22,000 19,500	Average price of 19,020 rubles was used for 1960-61. Estimated. Price of 1 July 1957 was 19,500 rubles. Production began in 1955.

Table 14
USSR: 1955 Prices of Civilian Machinery
(Continued)

Item	Model	1 July 1955 Rubles per Unit	Description	
VI. Tractors				
2. Wheeled (Continued)				
	DT-14	11,000	Estimated. Price of 1 July 1957 was 11,000 rubles. Production begun in 1955.	
	DT-28	19,000	Estimated. Not in production until 1958.	
	International 15/30	9,500	Estimated.	
	All others	12,600	Estimated price based on DSh-14 and DT-20, which began production in 1958	
VII. Agricultural machine building			Where the specific model is not given, the estimated representative price, based on prices of 2 or more models, is shown.	
1. Combines, grain, tractor-drawn	Stalinets-6	17,800		
2. Combines, grain, self-propelled	S-1M	23,200		
3. Combines, corn	KU-2	14,900		
4. Combines, flax	LK-7	19,000		
5. Combines, potato			Estimated on basis of reported 1950 and 1952 prices	
6. Combines, beet	SKEM-3	16,000		
7. Combines, ensilage	SK-2.6	10,900		
8. Cotton pickers	SKhM-4.6M	16,600		
9. Windrows	ZhR-4..6	22,700		
10. Pickups, for grain combines		4,200		
11. Plows, moldboard, tractor-drawn and mounted	PM-5-32M	9,950		
12. Harrow-plows, tractor-drawn		2,150		
13. Harrows, tractor-drawn		3,000		
14. Cultivators, tractor-drawn and mounted		2,000		
15. Sowing machines, tractor-drawn and mounted		1,600		
16. Potato planters, tractor-drawn and mounted	K-6B	2,000		
17. Moving machines, tractor-drawn and mounted		4,400		
18. Rakes, tractor-drawn		3,000		
19. Threshing machines, complex and semicomplex		2,600		
20. Grain cleaning machines		5,000		
21. Cutters, straw-ensilage		1,500		
VIII. Construction and road work equipment				
1. Excavators				
a. Multibucket	ETU-353	51,000	Including DT-55 tractor as part of machine	

Table 14
(Continued)

Item	Model	1 July 1955 Rubles per Unit	Description
VIII. Construction and road work equipment			
1. Excavators (Continued)			
b. Single-bucket (bucket capacity in cu m)			For 1959 weighted average of 1955 prices reflecting the 1958 mix
0.15	E-153	33,000	Net of the Belarus tractor mount
0.25 to 0.30	E-258	77,000	Including D-35 engine
0.35 to 0.75	E-651	81,350	Including KDM-46 engine
1	F-1003	131,000	Including electric motors
2	E-2001	350,000	Including electric motors
3 to 6	ESh-4/40	1,100,000	Including electric motors
10 or more	ESh-14/75	10,000,000	Including electric motors
2. Bulldozers	D-271	7,300	Net of S-80 tractor mount
3. Tractor-drawn scrapers	D-222	24,400	Net of S-80 tractor mount
4. Motor graders	D-265	60,000	Including D-54 engine
IX. Hoist-transport equipment			
1. Railroad cranes	PK-PUM3-15 (S-554)	126,000	
2. Truck cranes	K-51	30,800	Net of MAZ-200 truck series
3. Tower cranes	T-128	60,000	
4. Pneumatic tire cranes	K-102	142,000	Including KDM-46 engine
5. Elevators		25,000	Median price for 20 items
X. Metallurgical, mining, fuel-refining, and chemical equipment			
1. Metallurgical equipment, excluding			
2. Rolling mill equipment		3,600 per ton	
3. Coal combines		5,000 per ton	
4. Coal-cutting machines		74,800	Generally the most representative model
5. Rock-loading machines		34,500	Average price of two models
6. Electric mine locomotives		21,000	Median price for three models
7. Petroleum equipment (refinery)		27,000	Median price for six models
8. Deep well pumps		7,000 per ton	Estimated
9. Turbodrills		500	Median price for 67 models
10. Chemical equipment		13,000	Median price for five models
		6,900 per ton	Based on 1955 price and production data

Table 14

USSR: 1955 Prices of Civilian Machinery
(Continued)

Item	Model	1 July 1955 Rubles per Unit		Description
XI. Textile, leather, and publishing industry equipment				
1. Textile				
a. Carding machines for cotton		11,000		Median for five models
b. Spinning machines		35,000		Median price for 32 models
c. Reeling machines, excluding silk reeling		25,000		Median price for 22 models
d. Looms		7,000		Median price for 11 models
e. Circular hosiery automatics	KAS-22	6,720		
f. Industrial sewing machines		900		Median price for 22 models
2. Equipment for leather footwear industry				
a. Fleshing machines		16,200		Average price for two models
b. Tying machines		14,000		Average price for four models
3. Publishing		21,500		Median price for five models
a. Typesetting machines		70,000		Median price for five models
b. Flatbed printing presses				Average 1955 retail prices
XII. Consumer durables 2/				
1. Refrigerators		1,200		
2. Washing machines		1,000		
3. Vacuum cleaners		500		
4. Sewing machines		675		
5. Cameras		320		
6. Clocks and watches		174		
7. Electric irons		50		
8. Electric hot plates		50		
9. Electric tea and coffee pots		83		
10. Food grinders		54		
11. Motorcycles		3,500		
12. Bicycles		630		
13. Kerosene burners		50		

a. Consumer durables are adjusted for turnover taxes when aggregated with other civilian machinery.

Table 14
(Continued)

Item	Model	1 July 1955 Rubles per Unit	Description
XIII. Electronics			See also Appendix C.
1. Radios and radio phonographs		530	
2. Television sets		1,120	
3. Electron tubes and semiconductors		2,418	
XIV. Sanitary technical equipment			
1. Heating boilers		158	
2. Heating radiators		39.1	
3. Sewer pipe and fittings		1,180	
4. Enamelled bathtubs		248	
5. Bath water heaters		305	
XV. Civilian aircraft			
1. Piston	Li-2 Il-12 Il-14	1,150,000 4,000,000 4,500,000	
2. High-performance		19,500,000	See Appendix C.
XVI. Civilian shipbuilding			

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)

Item	Sources of Price Data
I. Boilers	
1. Steam boilers, 40 tons of steam per hr or over	USSR, Ministerstvo Finansov. <u>Spravochnik tsen na stroitel'nye materialy i oborudovaniye</u> (Handbook of Prices for Construction Materials and Equipment), Moscow, 1956, Part II, p. 943-944. (hereafter referred to as USSR, Ministerstvo Finansov. <u>Spravochnik</u>)
2. Steam boilers, 10 to 40 tons of steam per hr	<u>Ibid.</u> , p. 942.
3. Steam boilers, 10 tons of steam per hr or less	<u>Ibid.</u> , p. 938-939.
II. Electric power equipment	
1. Steam and gas turbines	<u>Ibid.</u> , p. 1072-1073.
2. Hydraulic turbines	<u>Ibid.</u> , p. 430-433.
3. Generators for steam turbines	<u>Ibid.</u> , p. 533.
4. Generators for hydraulic turbines	<u>Ibid.</u> , p. 534-536.
5. Electric motors over 100 kw	<u>Ibid.</u> , p. 483-486 and 495-496.
6. Power transformers	<u>Ibid.</u> , p. 684.
7. Electric bulbs	USSR, Ministerstvo Ugol'noy Promyshlennosti. <u>Materialy i oborudovaniye primenayemye v ugol'noy promyshlennosti: spravochnik</u> (Handbook of Prices for Materials and Equipment Used in the Coal Industry), Moscow, 1955, vol 1, Part I. (hereafter referred to as USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u>)
III. Metalcutting machine tools	
1. Lathes	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 56 (see I, 1, above).
2. Turret lathes	<u>Ibid.</u> , p. 58.
3. Automatic lathes (one spindle)	<u>Ibid.</u> , p. 61.

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
(Continued)

Item	Sources of Price Data
4. Plano-milling machines	<u>Ibid.</u> , p. 69.
5. Gear-making machines	<u>Ibid.</u> , p. 74.
6. Jig-boring machines	<u>Ibid.</u> , p. 63.
7. Planers	<u>Ibid.</u> , p. 66.
8. Shapers	<u>Ibid.</u>
9. Slotters	<u>Ibid.</u> , p. 67.
10. Horizontal broaching machines	<u>Ibid.</u>
11. Internal grinding machines	<u>Ibid.</u> , p. 78.
12. Drill grinders	<u>Ibid.</u> , p. 86.
13. Vertical drills	<u>Ibid.</u> , p. 65.
14. Radial drills	<u>Ibid.</u>
15. Special, specialized, and unit type	Estimate based on fragmentary data for a few models known to be special, specialized, or unit type.
16. Grinders, polishers, and bolt threaders	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 88 (see I, 1, above).
 IV. Railroad machine building	
1. Mainline freight cars, four-axle	
a. Refrigerator cars	<u>Ibid.</u> , p. 879.
b. Boxcars	<u>Ibid.</u>
c. Flatcars	<u>Ibid.</u>
d. Gondolas	<u>Ibid.</u>
e. Tank cars	<u>Ibid.</u> , p. 880.
f. Cement cars	<u>Ibid.</u>
2. Rail passenger cars	
a. Mainline passenger cars	<u>Ibid.</u> , p. 882-883.
b. Trolley cars	<u>Ibid.</u> , p. 883-884.
c. Subway cars	<u>Ibid.</u> , p. 882-883.

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
 (Continued)

Item	Sources of Price Data
3. Mainline locomotives	
a. Steam	
L	Ibid., p. 877.
SO	Estimate based on 1950 price adjusted for average price decline in 1950-55. See Moorsteen, Richard. <u>Prices and Production of Machinery in the Soviet Union</u> , Cambridge, 1962, p. 145.
LV	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 877 (see I, 1, above).
b. Diesel	
TE-1	Estimate based on 1950 price adjusted for average price decline in 1950-55.
TE-2	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 878 (see I, 1, above).
TE-3	Belen'ky, M.N. <u>Teplovoznaya tyaga i yeye effektivnost'</u> (<u>Diesel Traction and Its Effectiveness</u>), Moscow, 1956, p. 65.
c. Electric	
VL 22 ^m	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part IV, Moscow, 1958, p. 500 (see I, 1, above).
VL 23	<u>Zheleznodorozhnogo transporta</u> , no 8, 1959, p. 26.
N-8	Ibid., no 8, 1957, p. 29.
N-60	Ibid., no 8, 1959, p. 26.
V. Motor vehicles	
1. Passenger cars	
a. Moskvich 401 sedan	Estimated from data USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 905 (see I, 1, above). 1950-61 covers production of Moskvich 401, 402, 407.

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
 (Continued)

Item	Sources of Price Data
b. Moskvich 402, 407	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part IV, p. 616 (see I, 1, above).
2. Trucks	
GAZ-51	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 902 (see I, 1, above).
3. Buses	
PAZ-651, 652	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 904 (see I, 1, above).
VI. Tractors	
1. Tracklaying	
a. DT-54	USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u> , vol II, Part II, p. 163 (see II, 7, above).
b. KD-35	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 908 (see I, 1, above).
c. KDP-35, KDP-38	USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u> , vol II, Part II, p. 163 (see II, 7, above).
d. KT-12A	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 908 (see I, 1, above).
e. ASKhTZ-NATI	Estimate based on 1950 price adjusted for average price decline in 1950-55.
f. S-80	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 884 (see I, 1, above).
2. Wheeled	
a. U-1, U-2, U-3, U-4	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 908 (see I, 1, above).
b. KhTZ-7	<u>Ibid.</u>
c. Belarus (MTZ-1, MTZ-2, MTZ-5)	<u>Ibid.</u>

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
 (Continued)

Item	Sources of Price Data
d. DT-24	USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u> , vol II, Part II, p. 158 (see II, 7, above).
e. DT-14	<u>Ibid.</u>
f. DT-28	Estimate based on the general characteristics of this model. This model was first produced in 1958.
g. International 15/30	Estimate based on general characteristics of the model.
h. All others	It is assumed that the residual of wheeled tractors is allocated to DSh-14 and DT-20. Estimated price based on these model characteristics. See Table 6, Appendix C, p. 73, above.

VII. Agricultural machine building

1. Combines, grain, tractor-drawn	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part III, Moscow, 1956, p. 165 (see I, 1, above).
2. Combines, grain, self-propelled	<u>Ibid.</u>
3. Combines, corn	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part V, Moscow, 1959, p. 330 (see I, 1, above).
4. Combines, flax	Estimate based on price reduction of 14 percent in 1952 price.
5. Combines, potato	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part V, p. 335 (see I, 1, above).
6. Combines, beet	<u>Ibid.</u> , Part III, p. 167.
7. Combines, ensilage	<u>Ibid.</u> , Part V, p. 327.
8. Cotton pickers	<u>Ibid.</u> , p. 335.
9. Windrowers	<u>Ibid.</u> , Part III, p. 166.
10. Pickups, for grain combines	<u>Ibid.</u> , p. 165. Estimate based on average price of PG-2.0 and PS-2 models.
11. Plows, moldboard, tractor-drawn and mounted	<u>Ibid.</u> , p. 160.

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
 (Continued)

Item	Sources of Price Data
12. Harrow-plows, tractor-drawn	<u>Ibid.</u> . Estimate based on average price of LD-16.6 and LDN-2.4 models.
13. Harrows, tractor-drawn	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part V, p. 310 (see I, 1, above).
14. Cultivators, tractor-drawn and mounted	<u>Ibid.</u> , p. 312-317.
15. Sowing machines, tractor-drawn and mounted	<u>Ibid.</u> , p. 318-322.
16. Potato planters, tractor-drawn	<u>Ibid.</u> , p. 323.
17. Mowing machines, tractor-drawn and mounted	<u>Ibid.</u> , p. 324-325.
18. Rakes, tractor-drawn	<u>Ibid.</u> , p. 325-326.
19. Threshing machines, complex and semi-complex	<u>Ibid.</u> , p. 332-333.
20. Grain cleaning machines	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part III, p. 166 (see I, 1, above). Estimate based on average price of model OS-1.0 and OSM-3.
21. Cutters, straw-ensilage	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part V, p. 336 (see I, 1, above).
VIII. Construction and road work equipment	
1. Excavators	
a. Multibucket	USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u> , vol II, Part I, p. 259 (see II, 7, above).

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
(Continued)

Item	Sources of Price Data
b. Single-bucket (bucket capacity in cu m)	
0.15	Ibid., p. 235. Price adjusted to remove the tractor mount, Belarus, for this item.
0.25 to 0.30	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 4 (see I, 1, above).
0.35 to 0.75	USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u> , vol II, Part I, p. 243 (see II, 7, above).
1	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 4 (see I, 1, above).
2	Ibid., p. 3.
3 to 6	USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u> , vol II, Part I, p. 255 (see II, 7, above).
10 or more	Estimated on the basis of price per ton relationship of other large models.
2. Bulldozers	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , p. 19 (see I, 1, above). Price adjusted to remove cost of S-80 tractor.
3. Tractor-drawn scrapers	Ibid. Price adjusted to remove cost of S-80 tractor.
4. Motor graders	Ibid., p. 20.
IX. Hoist-transport equipment	
1. Railroad cranes	Ibid., Part V, p. 128.
2. Truck cranes	Ibid., p. 187.
3. Tower cranes	Ibid., Part II, p. 15.
4. Pneumatic tire cranes	Ibid., Part V, p. 185.
5. Elevators	Ibid., Part II. Median price for 20 items, p. 1061, 1064-1065.

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
 (Continued)

Item	Sources of Price Data
X. Metallurgical, mining, fuel-refining, and chemical equipment	
1. Metallurgical equipment, excluding rolling mills	Estimate based on 1950 price adjusted for 1950-55 price decline.
2. Rolling mill equipment	Estimate based on 1950 price adjusted for 1950-55 price decline.
3. Coal combines	USSR, Ministerstvo Ugol'noy. <u>Spravochnik</u> , vol II, Part I, p. 18 (see II, 7, above).
4. Coal-cutting machines	Ibid., p. 22, 25.
5. Rock-loading machines	Ibid., p. 41-45.
6. Electric mine locomotives	RAND Corporation. RM 2432, <u>Prices of Producers Durables in the United States and the USSR in 1955</u> , by Abraham S. Becker, 1959, p. 273-276.
7. Petroleum equipment (refinery)	Estimated to be similar to chemical equipment.
8. Deep well pumps	USSR, Ministerstvo Finansov, <u>Spravochnik</u> , Part III, p. 56-58 (see I, 1, above).
9. Turbodrills	Ibid., p. 49.
10. Chemical equipment	Estimate based on 1955 production reported in tons in <u>Narodnoye khozyaystvo SSSR v 1958 godu</u> (The National Economy of the USSR in 1958) Moscow, 1959, p. 235, and reported in rubles in <u>Narodnoye khozyaystvo SSSR v 1960</u> (The National Economy of the USSR in 1960), Moscow, 1961, p. 289. Per ton price derived from this data applied to the 1950-54 production.
XI. Textile, leather, and publishing industry equipment	
1. Textile	
a. Carding machines for cotton	USSR, Ministerstvo Finansov, <u>Spravochnik</u> , p. 218 (see I, 1, above).

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
(Continued)

Item	Sources of Price Data
b. Spinning machines	<u>Ibid.</u> , p. 220-222, 226, 230-231.
c. Reeling machines	<u>Ibid.</u> , p. 233.
d. Looms	<u>Ibid.</u> , p. 238-239.
e. Circular hosiery automatics	<u>Ibid.</u> , p. 252.
f. Industrial sewing machines	<u>Ibid.</u> , p. 250-251.
2. Equipment for leather footwear industry	
a. Fleshing machines	<u>Ibid.</u> , p. 255-256.
b. Tieing machines	<u>Ibid.</u> , p. 254.
3. Publishing	
a. Typesetting machines	<u>Ibid.</u> , p. 288-289.
b. Flatbed printing presses	<u>Ibid.</u> , p. 294.
XII. Consumer durables	Information on prices of consumer items available in retail price bulletins (<u>Byulleten' roznichnykh tsen</u>) published by the Ministry of Trade. These gen- erally were 1957 prices and may have been slightly lower than the prevailing 1955 prices. Travel reports and other published data were used to supplement the price data. Prices were adjusted 50 percent to eliminate turnover taxes and distribution charges.
XIII. Electronics	Detailed discussion of derivation of price per unit given in Appendix C.
1. Radios and radio phonographs	
2. Television sets	
3. Electron tubes and semiconductors	

Table 15

Documentation for 1955 Prices of Civilian Machinery (in Table 14)
 (Continued)

Item	Sources of Price Data
XIV. Sanitary technical equipment	
1. Heating boilers	USSR, Ministerstvo Finansov. <u>Spravochnik</u> , Part I, p. 708-710 (see I, 1, above). The average area of a boiler was determined at 25 square meters. No zonal pricing.
2. Heating radiators	<u>Ibid.</u> , p. 713. Average of radiator prices for Zone II.
3. Sewer pipe and fittings	<u>Ibid.</u> , p. 341. Average of prices of 50 mm, 100 mm, and 150 mm for Zone III.
4. Enameled bathtubs	<u>Ibid.</u> , p. 719. Average price. No zonal pricing.
5. Bath water heaters	<u>Ibid.</u> , Average of two types of water heaters.
XV. Civilian aircraft	Discussion of value estimates in Appendix C.
XVI. Civilian shipbuilding	Discussion of value estimates in Appendix C.

APPENDIX H

1955 PRICES OF PROCESSED FOODS IN THE USSR

- 123 -

[p. 122 blank]

Table 16

USSR: 1955 Prices of Processed Foods
Adjusted for Distribution Charges a/

Item	Adjusted 1955 Prices per Unit (Rubles)	
1. Bread and bakery products		
a. From quality flour	4,208	per mt
b. From coarse-milled flour	1,402	per mt
2. Meat and meat products	11,907	per mt
3. Fish and fish products	10,170	per mt
4. Butter	26,021	per mt
5. Sugar		
a. Granulated	8,496	per mt
b. Lump	10,384	per mt
6. Canned goods	4.4	per standard can
7. Vegetable oil	17,597	per mt
8. Margarine and compound fats	13,853	per mt
9. Wine	287	per decaliter
10. Champagne	263	per decaliter
11. Vodka and vodka products	424	per decaliter
12. Beer	44.9	per decaliter
13. Cigarettes	5.67	per 100
14. Soap	4,820	per mt
15. Cheese	36,270	per mt
16. Macaroni	3,862	per mt
17. Flour	2,647	per mt
18. Confectionery goods	18,325	per mt
19. Whole milk and whole milk products	2,790	per mt

a. The primary sources of the Soviet food price data are reports by experienced observers in residence in Moscow who regularly collect prices and check on the supply of food commodities. See Table 18, p. 135, below.

APPENDIX I

1955 PRICES OF SOFT GOODS IN THE USSR

- 127 -

[p. 126 blank]

Table 17

USSR: 1955 Prices of Soft Goods

Item	Rubles per Unit	Sources of Price Data	
Fabrics			
Cotton fabric	10.84 per sq m	Average retail price first quarter 1956, net of trade charges, in <u>Tekstil'naya promyshlennost'</u> , no 11, 1956, p. 60. Adjustments for trade charges are given in Table 19, p. 136, below. The index of state retail prices on cotton fabrics did not change between 1955 and 1956. See USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1960 godu</u> (The National Economy of the USSR in 1960), Moscow, 1961, p. 717 (hereafter referred to as <u>National Economy, 1960</u>), and USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1959 godu</u> (The National Economy of the USSR in 1959), Moscow, 1960, p. 679. (hereafter referred to as <u>National Economy, 1959</u>)	
Garments			
Silk fabric	36.55 per sq m	<u>Ibid.</u>	
Wool fabric	86.68 per sq m	<u>Ibid.</u>	
Linen fabric	12.64 per sq m	<u>Ibid.</u>	
Sewn garments	Net value, estimated	Net value for all years estimated on the basis of gross and net values for 1958, in <u>Shveychnaya promyshlennost'</u> , no 1, 1959, p. 4. Net production series derived by moving 1958 value added of production by the official gross production index for this branch of industry. Official sewn garment indexes for: 1950-55, USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Promyshlennost'</u>	

[p. 102 blank]

Table 17

USSR: 1955 Prices of Soft Goods
(Continued)

Item	Rubles per Unit	Sources of Price Data
Garments		
Sewn garments (Continued)		<p>nost' SSSR: <i>statisticheskiy sbornik</i> (Industry of the USSR: A Statistical Handbook), Moscow, 1957, p. 38. (hereafter referred to as <u>Industry</u>)</p> <p><u>1956-57</u>, National Economy, 1959, p. 146.</p> <p><u>1958</u>, <i>Shveychnaya promyshlennost'</i>, no 1, 1959, p. 4.</p> <p><u>1959-61</u>, USSR, <i>Tsentral'noye Statisticheskoye Upravleniye. Narodnoye khozyaystvo SSSR v 1961 godu</i> (The National Economy of the USSR in 1961), Moscow, 1962, p. 174. (hereafter referred to as <u>National Economy</u>, 1961)</p>
Knit outerwear	43.74 per piece	<p>Average weighted retail price for children's and adult's knit outerwear (sweaters, leggings, caps, gloves, scarves), net of trade charges.</p> <p>Retail prices by urban and rural areas for items are listed in various issues of USSR, Ministerstvo Torgovli, <i>Bulleten' roznichnykh tsen za 1957 g</i> (hereafter referred to as <u>Retail Price Bulletin</u>). The weight for children's outerwear at 62 percent and adults at 32 percent based on data in <u>Industry</u>, p. 345. From <u>National Economy</u>, 1960, p. 717; the index of retail prices for knit goods declined less than 2 percent between 1955 and 1957. Adjustments for trade charges are given in Table 19, p. 136, below.</p>

Table 17

USSR: 1955 Prices of Soft Goods
(Continued)

Item	Rubles per Unit	Sources of Price Data
Knit underwear	25.68 per piece	Average weighted retail prices for children's and adult's knit underwear, net of trade charges. Retail prices by urban and rural areas for items are listed in various issues of the <u>Retail Price Bulletin</u> during 1957. The weights for children's knit underwear of 33 percent and for adults of 67 percent are from <u>Industry</u> , p. 345. Index of retail prices on knit goods decreased slightly between 1955 and 1957. Adjustments for trade charges are given in Table 19, p. 136, below.
Hosiery	6.93 per pair	Average weighted retail price for men's, women's, and children's hosiery, net of trade charges. Retail prices from various issues of <u>Retail Price Bulletin</u> during 1957. Weights for types of stockings, based on data in <u>Industry</u> , p. 345. Retail prices on hosiery remained constant between 1955 and 1957. See <u>National Economy</u> , 1960, p. 717. Adjustments for trade charges are given in Table 19, p. 136, below.
Leather footwear	157.87 per pair	Average weighted retail prices for children's and adult's leather foot-wear, net of trade charges. Retail prices for natural leather, natural leather with welt, fancy natural leather, and textile and combination uppers, by urban and rural areas, are listed in various issues of <u>Retail Price Bulletin</u> . These types are weighted in accordance with ratios from <u>Industry</u> , p. 351. Retail prices for leather shoes remained constant between 1955 and 1957. See <u>National Economy</u> , 1960, p. 717. Adjustments for trade charges are given in Table 19, p. 136, below.

APPENDIX J

ADJUSTMENT FOR DISTRIBUTION CHARGES
ON NONDURABLE CONSUMER GOODS IN THE USSR
1955

- 133 -

[p. 132 blank]

Table 18
USSR: Adjustment for Distribution Charges on Processed Foods
1955

Item	Estimated 1955 Retail Prices per Unit ^{a/} (Rubles)	Trade Charges b/ (Percent of Retail Prices)		Percent of Retail Trade c/		Weighted Trade Charge (Percent)	Adjusted 1955 Prices per Unit (Rubles)
		Urban	Cooperative	Urban	Rural		
Bread and bakery products							
From quality flour	4,500 per mt	6.5	6.5	6.5	6.5	6.5	4,208 per mt
From coarse-milled flour	1,500 per mt	6.5	6.5	6.5	6.5	6.5	1,402 per mt
Meat and meat products	13,085 per mt	6.5	6.5				
Fish and fish products	11,350 per mt	7.0	9.0	82.5	17.5	9.0 d/	11,907 per mt
Butter	27,800 per mt	6.4	6.5	71.5	28.5	10.4 e/	10,170 per mt
Sugar						6.4	26,021 per mt
Granulated							
Jump	9,000 per mt	5.0	8.5	81.8	18.2	5.6	8,496 per mt
Canned goods	11,000 per mt	5.0	8.5	81.8	18.2	5.6	10,384 per mt
Vegetable oil							
Margarine and compound fats	4.8 per standard can	7.0	10.0	75.0	25.0	7.8	4.4 per standard can
Wine	18,800 per mt	6.4	6.5	71.5	28.5	6.4	17,597 per mt
Champagne	14,300 per mt	6.4	6.5	71.5	28.5	6.4	13,853 per mt
Vodka and vodka products	332 per decalilter	10.0	16.8				
Beer	307 per decalilter	11.0	17.8				
Cigarettes	490 per decalilter	5.0	7.4				
Flour and grain	50 per decalilter	7.4	11.0				
Confectionery goods	6 per 100	9.5	8.0				
Whole milk and whole milk products	5,100 per mt	5.5	10.0				
Soap	39,000 per mt	7.0	7.0				
Cheese	4,100 per mt	5.8	5.8				
Macaroni	2,810 per mt	5.8	5.8				
Flour and grain	19,910 per mt	6.5	12.0	70.6	29.4	5.8	2,647 per mt
Whole milk and whole milk products	3,000 per mt	7.0	7.0			8.1	18,325 per mt

a. The primary sources of Soviet food price data are reports by experienced observers in residence in Moscow who regularly collect prices and check on the supply of food commodities.

b. Lasevich, G.M., and Karelov, A.G., Torgovlye skidki na prodovol'stvennyye i promyshlennyye tovary ('Trade Discounts on Food and Industrial Goods'), Moscow, 1954, p. 54-61.

c. Employed where urban and rural trade charges are different; based on data from the USSR, Tsentral'noye Statisticheskoye Upravleniye, Sovetskaya torgovlya ('Soviet Trade'), Moscow, 1956, p. 66-68.

d. Inclusive of wholesale charges of 2.5 percent.

e. Inclusive of wholesale charges of 3.0 percent.

f. Estimated.

g. Urban trade charges.

[p. 134 blank]

Table 19
USSR: Adjustment for Distribution Charges on Soft Goods
1955

Item	1955 Retail Prices per Unit a/* (Rubles)	Trade Charge b/ (Percent of Retail Price)	Percent of Retail Trade c/ Retail Trade			Average Trade Charge (Percent)	Wholesale Charge d/ (Percent)	Total Distribution Charge (Percent)	Adjusted 1955 Prices per Unit (Rubles)
			Percent of Retail	Retail Trade c/ Retail Trade	(Percent)				
Cotton fabric	11.56 per sq m								
All urban, except cooperative Consumer cooperatives	38.60 per sq m	3.0 8.3	5.2 48	5.5	0.7	6.2	10.84	per sq m	
Silk fabric									
All urban, except cooperative Consumer cooperatives	91.34 per sq m	3.0 8.3	70 30	4.6	0.7	5.3	36.55	per sq m	
Wool fabric									
All urban, except cooperative Consumer cooperatives	13.38 per sq m	3.0 8.3	74 26	4.4	0.7	5.1	86.68	per sq m	
Linen fabric									
All urban, except cooperative Consumer cooperatives	5.8 9.5	66 34	4.8	0.7	5.5	12.64	per sq m		
Sewn garments e/									
All urban, except cooperative Consumer cooperatives									

* Footnotes for Table 19 follow on p. 137.

Table 19

USSR: Adjustment for Distribution Charges on Soft Goods
1955
(Continued)

Item	1955 Retail Prices per Unit a/ (Rubles)	Trade Charge b/ (Percent of Retail Price)	Percent of Retail Trade c/ Retail		Average Trade Charge (Percent)	Wholesale Charge d/ (Percent)	Total Distribution Charge (Percent)	Adjusted 1955 Prices per Unit (Rubles)
Knit outerwear	47.70 per piece							
All urban, except cooperative								
Consumer cooperatives								
Knit underwear	28.00 per piece							
All urban, except cooperative								
Consumer cooperatives								
Hosiery	7.56 per pair							
All urban, except cooperative								
Consumer cooperatives								
Leather footwear	170.67 per pair							
All urban, except cooperative								
Consumer cooperatives								

a. For documentation, see Table 17, p. 129, above.

b. Lasevich, G.M., and Karelov, A.G., Torgovlye skidki na prodovol'stvennye i promyshlennyye tovary (Trade Discounts on Food and Industrial Goods), Moscow, 1954, p. 62-65.c. Based on data from USSR, Tsentral'noye Statisticheskoye Upravleniye, Sovetskaya torgovlya (Soviet Trade), Moscow, 1956, p. 66-68.d. Ekonomika sovetskoy torgovli (Economics of Soviet Trade), Moscow, 1959, p. 424.

e. Net value, estimated; see Table 17, p. 129, above.

APPENDIX K

FOUR-DIGIT SIC CATEGORIES OF THE US FRB INDEX
THAT ARE REPRESENTED IN THE SAMPLE OF PRODUCTION
FOR THE USSR

Table 20

Four-Digit SIC Categories of the US FRB Index That Are Represented
in the Sample of Production for the USSR

Item	FRB Based on SIC a/	US 1957 Value-Added Weight	
		Soviet Sample	Comprehensive FRB
I. Industrial materials		<u>28.39</u>	<u>39.57</u>
Electricity	4911,12,13,14	<u>3.76</u>	<u>4.96 b/</u>
Coal		<u>1.30</u>	<u>1.30</u>
1. Anthracite	1101	0.12	
2. Bituminous	1201	1.18	
Petroleum and gas products		<u>6.75</u>	<u>7.68</u>
1. Petroleum, except paving mixtures and asphalt roofing	2903,4,5,6,7	1.77	
2. Crude oil	1301	4.33	
3. Natural gas	1302	0.32	
4. Natural gas liquids	1303	0.33	
Ferrous metals		<u>2.90</u>	<u>6.46 c/</u>
1. Steel mill products	3307,8,9,10,11	1.68	
2. Iron and steel castings	3312	0.99	
3. Steel forgings	3313	0.23	
Nonferrous metals		<u>0.55</u>	<u>1.97 d/</u>
1. Copper	3315,16	0.11	
2. Lead	3317	0.03	
3. Zinc	3319	0.05	
4. Aluminum	3314	0.24	
5. Secondary non-ferrous metals	3320	0.08	
6. Magnesium	3318	0.04	
Forest products		<u>1.14</u>	<u>1.65</u>
1. Logging	2401	0.25	
2. Lumber	2402	0.89	
Paper and paper products		<u>3.10</u>	<u>3.27</u>
1. Paper	2602,3,4,5	0.85	
2. Paperboard	2606	0.49	

- 141 -

[P. 140 blank]

Table 20

Four-Digit SIC Categories of the US FRB Index That Are Represented
in the Sample of Production for the USSR
(Continued)

Item	FRB Based on SIC a/	US 1957 Value-Added Weight	
		Soviet Sample	Comprehensive FRB
3. Building paper and board	2607	0.12	
4. Converted paper products	2608,9,10,11	1.64	
Chemicals and rubber products		<u>6.23</u>	<u>9.01 e/</u>
1. Basic inorganic chemicals	2801	0.69	
2. Atomic energy manufacturing	2802,3	0.39	
3. Basic organic chemicals	2804	1.40	
4. Synthetic materials	2805,6,7	1.13	
5. Paints	2811	0.60	
6. Fertilizers	2812	0.16	
7. Soap and allied products	2808	0.61	
8. Miscellaneous rubber and plastics	3004,5	1.25	
Construction materials		<u>2.66</u>	<u>3.27</u>
1. Cement	3206	0.38	
2. Flat and other glass	3201	0.47	
3. Structural clay products	3207,8	0.29	
4. Concrete and plaster products	3210	0.62	
5. Vitreous and porcelain fixtures	3202	0.10	
6. Stone and earth minerals	1401	0.80	
II. Nondurable consumer goods		<u>15.85</u>	<u>17.96</u>
Processed foods		<u>9.19</u>	<u>10.64</u>
1. Meat products	2001,2,3	1.47	
2. Butter	2005	0.07	
3. Cheese	2006,7	0.06	
4. Concentrated milk	2008	0.09	
5. Canned and frozen foods	2010	0.96	

Table 20

Four-Digit SIC Categories of the US FRB Index That Are Represented
in the Sample of Production for the USSR
(Continued)

Item	FRB Based on SIC a/	US 1957 Value-Added Weight	
		Soviet Sample	Comprehensive FRB
6. Wheat flour	2011	0.27	
7. Bakery products	2013	1.46	
8. Sugar	2015,16,17	0.21	
9. Confectionery	2014	0.43	
10. Alcoholic beverages	2022,23,24,25	1.10	
11. Tobacco (cigarettes)	2101	0.57	
12. Miscellaneous food preparations	2018	1.20	
13. Vegetable and animal oils	2019,20	0.20	
14. Fluid milk	2004	1.10	
Soft goods		<u>6.66</u>	<u>7.32</u>
1. Textile mill products		2.55	
a. Yarn and fabrics	2201-6	1.89	
b. Knit goods	2207,8,9	0.66	
2. Apparel and allied products		3.44	
a. Outerwear	2301-7	2.11	
b. Miscellaneous apparel	2308,9	1.33	
3. Leather shoes and slippers	3103	0.67	
III. Metal fabricating		<u>23.55</u>	<u>34.80 f/</u>
Farm machinery	3501	0.34	
Farm tractors	3502	0.24	
Tracklaying tractors	3504	0.20	
Metalworking machinery	3503	0.83	
General heavy industry	3505	2.23	
Transformers and control	3601	1.56	
Motor vehicles and parts	3701-8	5.04	
Railroad equipment	3716,17	0.34	
Aircraft and parts	3712,13,14	4.61	
Boat building	3710	0.09	
Private shipyards	1904	0.55	
Special industry machinery	3506	1.27	
Telephone and telegraph equipment	3602	1.17	
Electron tubes	3603	0.35	

Table 20

Four-Digit SIC Categories of the US FRB Index That Are Represented
in the Sample of Production for the USSR
(Continued)

Item	FRB Based on SIC a/	US 1957 Value-Added Weight	
		Soviet Sample	Comprehensive FRB
Radio and television sets	3605,6,7,8	0.58	
Refrigerators	3611	0.19	
Washing machines	3614	0.10	
Electrical housewares	3616	0.34	
Vacuum cleaners	3617	0.06	
Motorcycles and bicycles	3711	0.04	
Clocks and watches	3804	0.11	
Miscellaneous consumer durables	3902	0.40	
Structural metal parts	3401	2.91	
IV. Excluded on both sides			<u>7.67</u>
Printing and publishing	27		4.66
Miscellaneous manufactures	39 except 391,3;3949		1.08 g/
Furniture and fixtures	25		1.48
Glass containers	3221		0.29
Home glassware and pottery	3229 (part);3262,3,9		0.16
V. Comparable Soviet sample			<u>67.79</u>

- a. FRB code based on 1957 SIC categories.
- b. Including gas.
- c. Including iron ore mining.
- d. Including nonferrous metal mining.
- e. Including 1.91 percent for rubber and rubber products.
- f. Including 28.98 percent for machinery and related products, 5.42 percent for fabricated metal products, and 0.40 percent for miscellaneous consumer durables.
- g. Excluding miscellaneous durable consumer goods.

APPENDIX L

DERIVATION OF 1955 VALUE-ADDED WEIGHTS FOR CIVILIAN PRODUCTION
IN THE USSR

DERIVATION OF 1955 VALUE-ADDED WEIGHTS FOR CIVILIAN PRODUCTION IN THE USSR

Value-added weights employed in this report for Soviet civilian industry in 1955 amounted to 198.1 billion rubles. This aggregate is based on an estimated wage bill of 170.3 billion rubles, amortization charges of 24.2 billion rubles, and 3.6 billion rubles of combined wages and amortization charges for military electronics. The details of these estimates are given below.

A. Estimated 1955 Wage Bill

In order to estimate the wage bill component of 1955 value-added weights, employment of wage and salary workers by branch of industry (Soviet classification) as well as average annual earnings of these employees in state and cooperative industry were calculated. These data are presented in Table 21.* The 12 industrial branches designated in this report accounted for 96 percent of total industrial employment in 1955. 51/ The employment represents all persons, wherever employed, who contribute to production of industrial goods (industry-section concept).**

Industry section employment data extend beyond state establishments to include all persons engaged in industrial activities. By expanding the published basic industry section data, which cover wageworkers only (rabochiye), an employment series representing all workers and employees was constructed. 52/

Because the USSR does not publish data on average annual money earnings expressed in rubles, the estimates were compiled from data on annual percentage changes in real and money wages since 1941 and from information on relative wages between industries in the 1941 State Plan. 53/ For 1955, percentage relationships of the level of average wages in 1955 or 13 branches of industry to the wage level in the coal industry were employed.

B. Amortization Charges

The amortization charges are calculated by applying prevailing amortization norms against capital stock at original cost. These data are shown in Table 22.*** For the 1 January 1960 revaluation of assets the replacement cost of industrial productive fixed capital for industry is estimated to be 800.1 billion rubles in terms of 1 July 1955 prices. 54/

* P. 151, below.

** A different concept, labor section, relates to persons employed in productive work in state establishments formally classified as within a particular branch of industry. The percentage distribution of labor section employment by branch is roughly equivalent to the industry section percent by branch.

*** P. 152, below.

Applying the official indexes on growth of capital stock, 55/ the replacement cost of industrial productive fixed capital at the end of 1955 is estimated to be 558.1 billion rubles in terms of 1 July 1955 prices.*

Since the prevailing norms (composite of capital repair and capital investment) for 1955 were based on original costs, the estimate of industrial capital stock in 1955 must be shifted to an original cost basis. In the 1960 revaluation of assets, the ratio of replacement cost to original cost for industry was 98 percent. 56/ On the assumption that the impact of changes in the asset composition (structures and equipment) between 1956 and 1960 may have been offsetting, the same ratio is applied to 1955. An estimate of 569.5 billion rubles for industrial productive fixed capital (in original cost) is made for 1955.

This control total adjusted to exclude industries not in the sample of industrial production index (printing 0.4 percent, ceramics 0.6 percent, residual fuel (peat, shale) 3.5 percent, and miscellaneous 1.9 percent) is estimated to be 533.0 billion rubles. This estimate of industrial productive fixed capital is disaggregated by branch of industry for 1955. 57/ Capital consumption allowances are derived by applying the prevailing 1956 norms to industrial productive fixed capital by branch of industry. Capital consumption allowances of approximately 27 billion rubles were estimated compared with an independent estimate of 26 billion rubles for all of state industry. 58/

C. Adjustment to Exclude Military Hardware Production

The wage bill and amortization for the whole of machine building and metalworking (MBMW) in Tables 21 and 22 give a total value added of 80.6 billion rubles. This, however, includes military hardware production. Since the CIA index includes primarily civilian machinery production, the weight for MBMW must be reduced accordingly.

No precise basis is available for estimating the breakdown of MBMW between civilian and military production. However, Soviet statistics on (1) the ruble value of investment in machinery and equipment and (2) the total value of final output of the MBMW branch of industry provide a crude basis for estimating the order of magnitude of the civilian/military breakdown. On this basis it was ascertained that the civilian output was in the neighborhood of 50 or 60 percent of total MBMW final output. A test of the alternative civilian machinery weights, 50 and 60 percent, showed that neither the over-all industry indexes nor the civilian machinery (including all electronics) indexes are significantly influenced by the choice of weights (see Table 23**). Therefore, in the final indexes

* The official indexes of growth of capital stock are suspect for 1958 and 1959. Some adjustment of the official data for this period would yield a 1955 estimate of 513 billion rubles for industrial productive fixed capital. More precise estimates of capital stock for years prior to the revaluation are being calculated.

** P. 153, below.

presented in the body of this report the weight used for civilian as a share of total machinery and metalworking was 50 percent. Details of the basis for estimating the machinery weights are described below.

Gross industrial production of MBMW in 1955 was 174 billion rubles. 59/ Machinery gross production, which is approximately 80 percent of MBMW, is estimated to be 139.2 billion rubles in 1955. The remainder of MBMW is metalworking and repair industry. In order to derive an estimate of final product or unduplicated output of machinery, certain items (value of unfinished production, increase in the stock of special instruments, own capital repair of equipment, and value of purchases internal to this sector) must be deducted from gross industrial production. It has been reported that final items (gotovyye) make up 95 percent of the volume of gross industrial production of all industry. 60/ Because the volume of unfinished production is larger in machinery, this ratio might be too high. This conservative estimate of the nonfinal product component of machinery gross industrial production may be offset by an adjustment of 16 percent for intrabranch costs.* Employing the 95-percent and 16-percent ratios, respectively, it is estimated that the unduplicated output of all machinery is approximately 110 billion rubles in 1955. Using the same procedure, the final output of all MBMW can be estimated at 138 billion rubles. The difference of 28 billion represents the final output of metalworking and repair.

Civilian machinery includes machinery and equipment for investment and for consumers. Investment in machinery and equipment was 54.6 billion rubles in 1955, and when calculated estimates of 6.9 billion rubles for consumer durables including consumer electronics are added, sales of machinery and equipment for civilian use total approximately 61.5 billion rubles in 1955.

Civilian investment plus consumer durables totaling 61.5 billion rubles are 45 percent of the final output of MBMW of 138 billion. But most of metalworking products are also probably civilian. Adding 28 billion to 61.5 billion gives 89.5 billion, which is 65 percent of MBMW. These two fractions suggest that the correct civilian weight is in the neighborhood of 50 to 60 percent.

The two alternatives, 50 and 60 percent applied to the total value added in MBMW, give 40.3 and 48.4 billion rubles, respectively. See Table 24,** footnotes d and f.

* Purchases mainly of components and parts by machine building enterprises from other machine building plants. In 1959 the relative weight of these purchases by machine building plants (in state industry) was 17 percent of outlays on production. 61/

** P. 154, below.

D. Adjustment for Electronics

The final adjustment of weights is the calculation of a separate weight for all electronics. The value-added weight for civilian machinery includes civilian electronics but presumably excludes military electronics. The aggregate electronics production series includes both civilian and military output. These series represent the fastest growing and largest item of the machinery sample. The electronics weight is derived in the following manner:

1. Value of output of electronics for 1955 is estimated at 10.9 billion rubles.* Value added is assumed to be half of value, or 5.4 billion rubles.

2. It is assumed that civilian electronics is one-third, or 1.8 billion rubles of value added, and that the military is two-thirds, or 3.6 billion of value added.

3. The civilian electronic value added of 1.8 billion rubles is subtracted from the two alternative civilian machinery value-added estimates, 40.3 and 48.4, to obtain for value added in nonelectronics civilian machinery 38.5 and 46.6 billion rubles (see Table 24**).

4. The intrasector weights for machinery (for the 50-percent alternative) are thus, in percent:

Machinery (excluding electronics)	87.7
Electronics	12.3

5. The value-added weights for the materials, machinery, and consumers goods sectors used in the final index are 52.3 percent, 22.2 percent, and 25.5 percent, respectively, as shown in the next to the last column of Table 24**.

E. Test of Alternative Civilian Machinery Weights

Neither the aggregate industrial indexes nor the civilian machinery indexes are significantly influenced by the choice of machinery weights. In Table 23*** are compared both indexes with a 50-percent and 60-percent ratio applied to the MBMW value-added aggregate. In this report the 50-percent ratio based on final product of civilian machinery to final product of MBMW has been used.

* For the estimate of value of output of electronics, see Appendix C.

** P. 154, below.

*** P. 153, below.

Table 21

USSR: 1955 Estimated Industrial Wage Bill

Item	Employment a/ (Thousand Persons)	Average Wages b/ (Rubles)	Wage Bill (Million Rubles)	
Industrial materials				
Electric power	359	9,794		
Coal	1,093	15,045		
Petroleum products and natural gas	220	11,314		
Ferrous metals	766	12,532		
Nonferrous metals	559	13,902		
Forest products	2,808	9,478		
Paper products	125	10,832		
Chemicals	762	10,336		
Construction materials	1,293	9,343		
Machine building and metalworking	7,201	10,231		
Nondurable consumer goods			73,673	
Processed foods	2,159	7,116		
Soft goods	3,652	8,305		
Total c/	<u>20,997</u>	<u>207,110</u>		

a. CIA/RR ER 60-44, Average Annual Money Earnings in Soviet Industry, 1940-58, Dec 1960, p. 4.

b. Ibid., p. 3.

c. Excluding a residual of 857,000 workers in printing and publishing, water works, and miscellaneous manufactures.

Table 22
USSR: 1955 Estimated Amortization Charges

Item	Fixed Capital a/ (Percent)	Fixed Capital and Original Cost b/ (Billion Rubles)	Norms c/ Estimated Amortization (Million Rubles)
Industrial materials			
Electric power	12.2	65.0	4.5
Coal	8.3	44.2	4.3
Petroleum products and natural gas	7.6	40.5	5.6
Ferrous metals	9.2	49.0	4.8
Nonferrous metals	6.0	32.0	5.5
Forest products	5.4	28.8	5.0
Paper products	1.2	6.4	4.6
Chemicals	5.7	30.4	5.2
Construction materials	5.4	28.8	1,498
Machine building and metalworking	25.5	135.9	5.1
Nondurable consumer goods			6,931
Processed foods	8.7	46.4	6.8
Soft goods	4.8	25.6	6.6
Total	100.0	533.0	27,638

a. Derived from USSR, Tsentral'noye Statisticheskoye Upravleniye, *Promyshlennost' SSSR: statisticheskiy sbornik* (Industry of the USSR: A Statistical Handbook), Moscow, 1957, p. 17.

b. USSR, Tsentral'noye Statisticheskoye Upravleniye, *Narodnoye khozyaystvo SSSR v 1960 godu* (The National Economy of the USSR in 1960), Moscow, 1961, p. 85, 86, and *Narodnoye khozyaystvo SSSR v 1959 godu* (The National Economy of the USSR in 1959), Moscow, 1960, p. 73.

c. Bunich, P., *Amortizatsiya osnovnykh fondov v promyshlennosti (Amortization of Fixed Assets in Industry)*, Moscow, 1957, p. 106-107.

d. Based on unadjusted fixed capital ratios.

Table 23

USSR: Indexes of Production with Alternative Machinery Weights
1950-61

Year	Civilian Machinery		Aggregate Civilian Industrial Production	
	a/	b/	a/	b/
1950	61.8	62.5	61.7	61.8
1951	62.0	62.4	68.9	68.7
1952	64.3	64.6	73.5	73.3
1953	75.1	75.4	80.7	80.6
1954	86.4	86.5	90.2	90.1
1955	100.0	100.0	100.0	100.0
1956	118.6	118.5	110.8	111.1
1957	137.4	137.1	122.6	123.1
1958	148.8	148.0	133.7	134.0
1959	159.4	158.3	145.2	145.5
1960	172.5	170.9	154.3	154.6
1961	191.9	189.6	164.5	165.0

a. Assuming that civilian machinery is 50 percent of MBMW value added, or 22.2 percent of all industry.
 b. Assuming that civilian machinery is 60 percent of MBMW value added, or 25.2 percent of all industry.

Table 24

USSR: 1955 Estimated Value-Added Weights Exclusive of Military Hardware

Item	Million Rubles		Value-Added Weights (Percent)	
	Wage Bill ^{a/}	Amortization ^{b/}	^{c/}	^{d/}
Industrial materials				
Electric power	3,516	2,925	6,441	3.1
Coal	16,444	1,901	18,345	8.9
Petroleum products and natural gas	2,489	2,268	4,757	2.4
Ferrous metals	9,600	2,352	11,952	6.0
Nonferrous metals	7,771	1,760	9,531	4.8
Forest products	26,614	1,455	28,069	14.2
Paper products	1,354	305	1,659	0.8
Chemicals	7,876	1,398	9,274	4.7
Construction materials	12,080	1,498	13,578	6.8
Machinery, including electronics				
Civilian machinery, excluding electronics	36,836	3,466	43,920	51.980
Electronics				22.2
Nondurable consumer goods				
Processed foods	15,363	3,155	18,518	19.5
Soft goods	30,330	1,690	32,020	2.7
Total, excluding military electronics	170,273	24,173	194,446	202,506
Total, including all electronics			198,064	206,124
				100.0
				100.0

- a. See Table 21, p. 151, above.
- b. See Table 22, p. 152, above.
- c. Assuming that civilian machinery is 50 percent of MBMW value added.
- d. Assuming that civilian machinery is 60 percent of MBMW value added.
- e. The value added of machinery of 40,302 million rubles has been adjusted to exclude civilian electronics.
- f. The value added of machinery of 48,360 million rubles has been adjusted to exclude civilian electronics.

APPENDIX M

OFFICIAL SOVIET INDEXES, BY BRANCH OF INDUSTRY
1950-61

Table 25

Official Soviet Indexes, by Branch of Industry
1950-61

Item							1950 = 100				
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Industrial materials											
Electric power	115	130	150	170	196	221	246	282	324	364	410
Fuel	110	121	132	144	162	173	187	210	225	243	260
Ferrous metals	116	131	145	159	176	193	208	222	244	269	290
Nonferrous metals	116	137	152	174	195	210	224	249	270	295	320
Forest products	112	117	121	135	146	153	164	182	201	211	220
Paper products	114	127	145	161	172	185	203	216	228	244	260
Chemicals	122	142	162	184	222	252	282	320	356	398	450
Construction materials	126	146	167	193	235	261	324	392	469	554	620
Machine building and metalworking											
Consumer goods	118	137	159	185	220	251	284	323	372	428	490
Light industry											
Food industry	119	129	143	163	178	191	201	217	234	249	260
Total industry	116	130	145	165	185	205	226	249	277	304	332

[p. 18 blank] - 157 -

Table 26

Documentation for Official Soviet Indexes, by Branch of Industry
(in Table 25)

Item	Sources
Electric power	<u>1950-55</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Promyshlennost'</u> SSSR (Industry of the USSR), Moscow, 1957, p. 37. (hereafter referred to as <u>Industry</u>) <u>1956-57</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1958 godu</u> (National Economy of the USSR in 1958), Moscow, 1959, p. 140. (hereafter referred to as <u>National Economy, 1958</u>) <u>1958-61</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1961 godu</u> (National Economy of the USSR in 1961), Moscow, 1962, p. 174. (hereafter referred to as <u>National Economy, 1961</u>)
Fuel	<u>1950-54</u> , <u>Industry</u> , p. 37. <u>1955</u> , USSR, Tsentral'noye Statisticheskoye Upravleniye. <u>Narodnoye khozyaystvo SSSR v 1960 godu</u> (National Economy of the USSR in 1960), Moscow, 1961, p. 226. (hereafter referred to as <u>National Economy, 1960</u>) <u>1956-57</u> , Adjusted to reflect the new 1958 official index. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 174.
Ferrous metals	<u>1950-54</u> , <u>Industry</u> , p. 37. <u>1955</u> , <u>National Economy</u> , 1960, p. 226. <u>1956-57</u> , Adjusted to reflect the new 1958 official index. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 174.

Table 26

Documentation for Official Soviet Indexes, by Branch of Industry
 (in Table 25)
 (Continued)

Item	Sources
Nonferrous metals	<u>1950-55</u> , <u>Industry</u> , p. 37. <u>1956-59</u> , <u>USSR, Tsentral'noye Statisticheskoye Upravleniye. Narodnoye Khozyaystvo SSSR v 1959 godu</u> (National Economy of the USSR in 1959), Moscow, 1960, p. 147. (hereafter referred to as <u>National Economy, 1959</u>) <u>1960-61</u> , Based on Seven Year Plan goal.
Forest products	<u>1950-55</u> , <u>Industry</u> , p. 37. <u>1956-57</u> , <u>National Economy, 1959</u> , p. 147. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 174.
Paper products	<u>1950-55</u> , <u>Industry</u> , p. 37. <u>1956-57</u> , <u>National Economy, 1959</u> , p. 147. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 174.
Chemicals	<u>1950-54</u> , Combining of chemicals and rubber asbestos industry in proportion of 85 and 15 percent, respectively, in order to make it comparable with series after 1955. <u>1955</u> , <u>National Economy, 1960</u> , p. 226. <u>1956-57</u> , <u>National Economy, 1959</u> , p. 147. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 174.
Construction materials	<u>1950-54</u> , <u>Industry</u> , p. 37. <u>1955</u> , <u>National Economy, 1960</u> , p. 226. <u>1956-57</u> , Adjusted to reflect the new 1958 official index. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 174.
Machine building and metalworking	<u>1950-55</u> , <u>Industry</u> , p. 37. <u>1956-57</u> , <u>National Economy, 1958</u> , p. 140. <u>1958-61</u> , <u>National Economy, 1961</u> , p. 174.

Table 26

Documentation for Official Soviet Indexes, by Branch of Industry
(in Table 25)
(Continued)

Item	Sources
Light industry	<u>1950-55</u> , <u>Industry</u> , p. 38. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 147. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 174.
Food industry	<u>1950-55</u> , <u>Industry</u> , p. 38. <u>1956-57</u> , <u>National Economy</u> , 1959, p. 147. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 174.
Total industry	<u>1950-55</u> , <u>Industry</u> , p. 37. <u>1956-57</u> , <u>National Economy</u> , 1958, p. 140. <u>1958-61</u> , <u>National Economy</u> , 1961, p. 174.

APPENDIX N

LINKAGE OF THE SMALL SAMPLE OF PRODUCTION
IN THE USSR FOR 1947-49
TO THE SAMPLE FOR 1950-61

LINKAGE OF THE SMALL SAMPLE OF PRODUCTION
IN THE USSR FOR 1947-49
TO THE SAMPLE FOR 1950-61

Estimates of aggregate production for the 1947-49 period were based on a smaller sample than for the 1950-61 period. The most serious deficiencies in data were in machinery. Within the materials sector, there were gaps in construction materials and chemicals, but in the former the missing items accounted for a small percent of 1950 output. Plastics and synthetic fibers, which had a combined proportion of approximately 9 percent of chemicals, are missing from the sample for the earlier period.

The civilian machinery index for the earlier period was derived from (1) the following seven series fully available for 1947-49 -- boilers, electric power equipment, railroad machine building, motor vehicles, tractors, civilian aircraft, and civilian shipbuilding -- and (2) estimates for the remaining seven series of the civilian machinery sector. The continuous series available accounted for 55.7 percent of the adjusted civilian sector in 1950.* Partial components for agricultural machinery (84 percent of its total in 1950), textile machinery (60 percent of its total in 1950), and construction and road building machinery increased the coverage to 73 percent. Partial data for machine tools; metallurgical, mining, and chemical equipment; and estimated growth functions for electronics and consumer durables, when added to the available data, account for 98.7 percent of the adjusted civilian sector in 1950. The remaining items were included in the gap and not specifically identified. Thus an aggregate estimate for the civilian machinery sector comparable to the totals for 1950-61 was made for the 1947-49 period.

Within processed foods, bread was the most important missing category for the years 1947-49. For 1947 only, other foods subgroups, constituting 17 percent of total processed foods category in 1950, were presumed to have increased at the same rate as the available series for 1947-48. The sewn garments estimates were based on production of cloth fabrics for 1947-49.

* The adjusted total excludes estimates for spare parts and for sanitary technical equipment.

APPENDIX O

SOURCE REFERENCES

- 165 -

[p. 164 blank]

SOURCE REFERENCES

In this supplementary volume, complete documentation is given for all production and price data used in the construction of the indexes for the 1950-61 period. Because each table is individually sourced, the serially numbered references of Appendix O apply only to the text.

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